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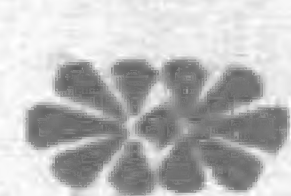
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THE FAR EASTERN REVIEW

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Vol. XII., No. 2. ❁

SHANGHAI—MANILA ❁

July, 1915.

China's Plant Resources

How United States Department of Agriculture Turns them to Advantage

Phosphate Deposits of Angaur Island

Remodeling the Chien-Men, Peking

Bureau of Industry for China

The Waterworks of Swatow

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VOL. XII.

SHANGHAI, JULY, 1915

No. 2

CHINA AS A MOST PROMISING FIELD FOR PLANT EXPLORATION

What the United States Department of Agriculture is Doing in the Modern Utilization of the Agricultural Resources of Ancient Cathay.

The ambition of every scientist is to blaze the way into untrodden fields of thought, and while most of the latter day devotees of knowledge find that the path leads only to a daily routine between the four walls of a laboratory, there are some whose workshop is the world and whose pleasure it is to penetrate into the deserts and mountain fastnesses of the back blocks of the earth, to find there some ancient thing which modern man may bend to his use. Such is the work of Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture of the United States, and for ten years he has been traversing China in the search for some new plant or old one that may be turned to profit by the modern agriculturist. Nor does he return empty handed, since his every trip into the fastnesses of the land of Sinim has been productive of a wealth of agricultural and other material whose value no man can yet estimate, since the economic value of his discoveries has not been put to the full test of long continued use.

In his ten years' wandering, Mr. Meyer has traversed many regions whose proper position on the map and whose boundaries are not yet definitely fixed. Chinese and Russian Turkestan, the Altai Mountains and the Gobi Desert are as well known to him as is his front door stoop to the average laboratory professor. Mr. Meyer was the first white man of modern times to penetrate the virgin forests of the upper Yalu and Tumen rivers and his is probably the first white foot to tread the oases of China's great deserts, for his work is not only to investigate the fertile plains and grazing grounds in search of the plant or tree of immediate economic importance which can be adapted to new surroundings, but to penetrate the barren lands and jungles and there find the rudimentary and long forgotten parent stock or the as yet unused wild plant that may be adapted to man's profit by cultivation.

Mr. Meyer is now returning to the United States after his fourth journey through China, the only one that he has not completed according to his prearranged schedule. This

incompleteness was due to the disinclination of his baggage bearers to be boiled in oil and eaten alive by the Thibetans, a fate which they were assured would certainly overtake them if they ventured across the border of Kansu Province, the most northern

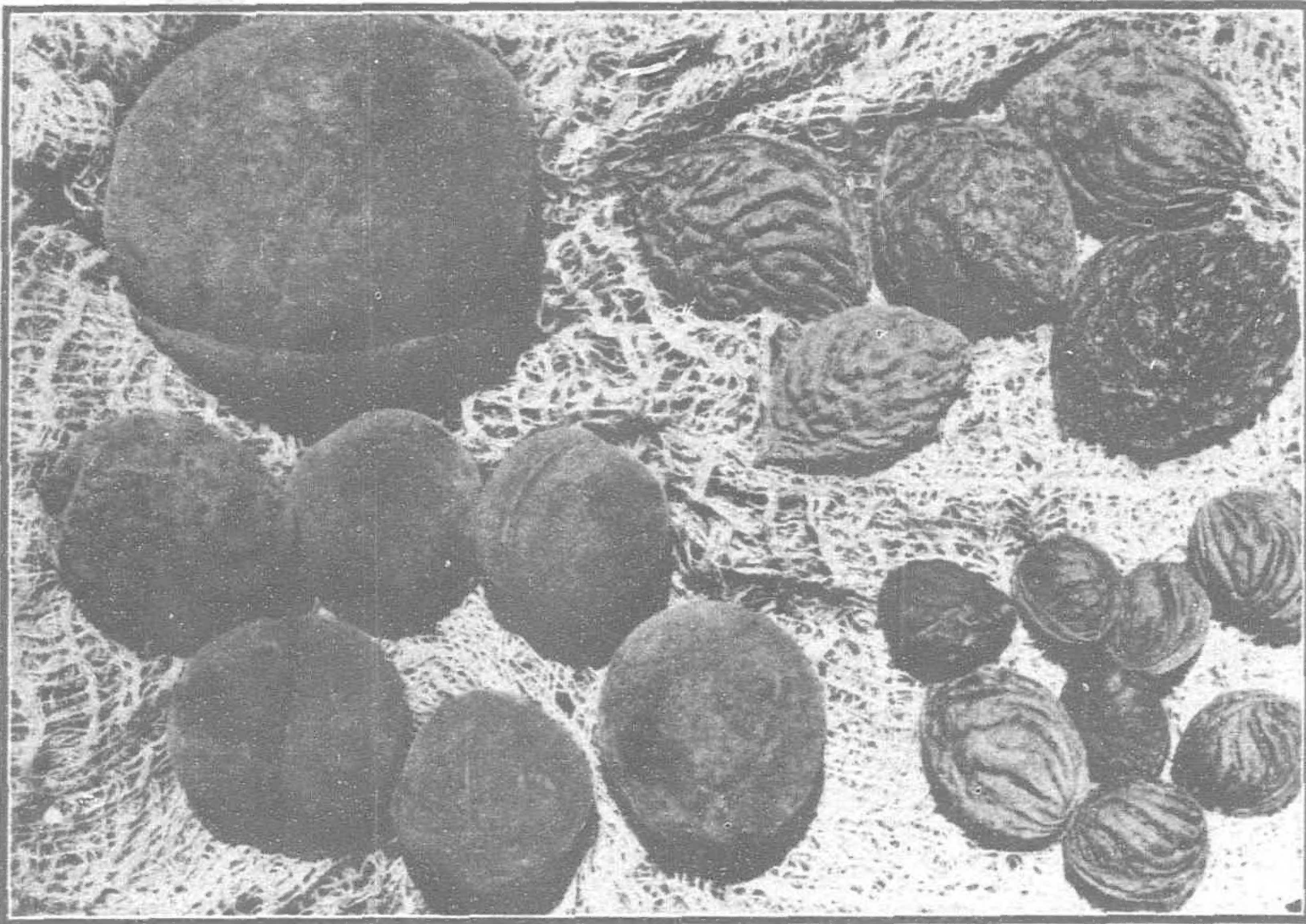
of China proper, into Thibet, and as the warning was given by the Chinese officials of that outpost of China, the bearers vanished in the night, leaving the explorer to get his collections and food supplies to a shipping point as best he might.

China is the most important field for the plant explorer from the United States, Mr. Meyer says, because the range of climate of the two countries is so similar that plants from any zone of China will find favorable climatic conditions in America. So closely allied are the vegetations of the two countries that he has come to believe that the Eastern half of the United States must once have been connected by land with China. In no other way can he account for the two countries possessing plants and trees that scarcely can be told from each other, than that in the early ages of the world, the parents of both the Chinese and American varieties were carried from one to the other.

Of the numerous examples he is prepared to cite, a few may be specially mentioned. The magnolia of the Southern States has many close relations in China, the only other country where this tree is known to grow. The sassafras with its toothsome root and odor used in scenting soap, as it grows in the United States differs very little from the Chinese variety. The tulip tree, *Liriodendron tulipifera*, is found only in Hupei province and in the southern United States. Even the tree from which the Chinese get their tea-chest wood, *Liquidamber formosana*, is practically identical with the sweet gum tree of the South, *Liquidamber styraciflua*, and many of the maples and oaks with which the two countries abound are so similar that the microscope of the botanist is required to determine whether their origin was China or the United States. The tree that produces the wood for leadpencils is so similarly



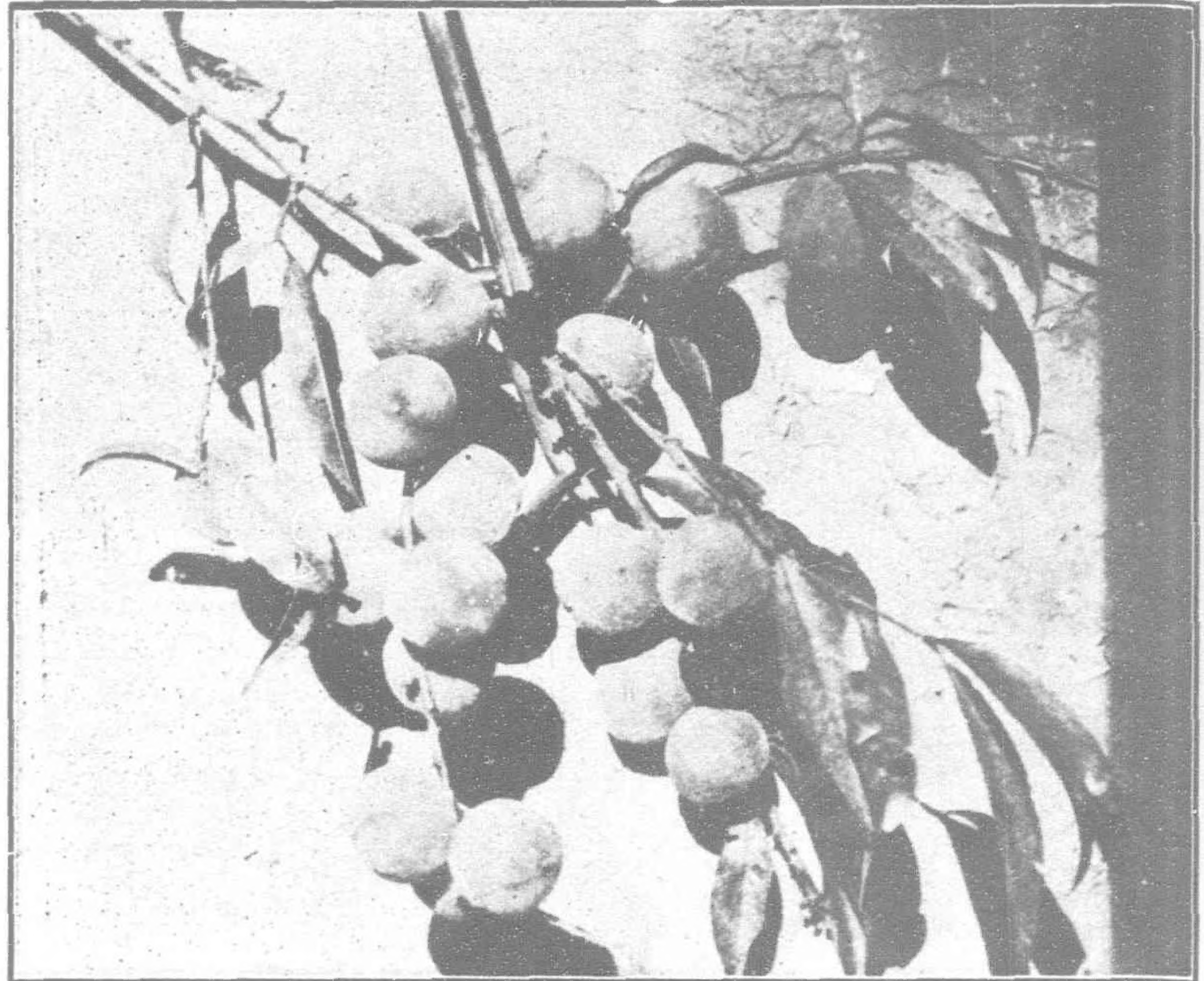
MR. FRANK N. MEYER, Plant Explorer for the U. S. Department of Agriculture



Wild and Cultivated Peach compared as to size of fruit and stone

paralleled that one is called *Juniperus virginiana* and the other *Juniperus chinensis*, the name of the country being about the only visible difference.

China's plants and trees having been grown and tended by man over so many centuries more than those of the United States, it is to be expected that some of the characteristics of the people might have been acquired by the trees, and the reasonableness of this supposition is borne out by one of the many important discoveries made by Mr. Meyer in the journey he has just finished. The chestnut trees of the United States have been attacked during the last decade by a blight whose ravages have proved so serious and the efforts of scientists so unavailing that the chestnut groves of the United States are acknowledged to be doomed to speedy extinction. Now China also grows the chestnut, and is probably one of the parent countries of that tree. Therefore Mr. Meyer examined the Chinese chestnut to see whether it was attacked by the same disease which was believed to have been introduced into the United States from Japan. The disease was found, but with this difference, that the tree grew on despite it and seemed scarcely distressed by the fungus growth that was killing the chestnut forests of the United States. The Chinese tree seemed to have acquired powers of resistance to disease, a quality so often attributed to the Chinese people, that its more modern United States representative utterly lacked. So it will come about that the chestnut forests of America will be replaced by



China's Wild Peach, forerunner of all cultivated peaches. Grows in Shensi, Kansu and Szechuan

the Chinese tree and the economic void that would be left by the disappearance of the former be obviated.

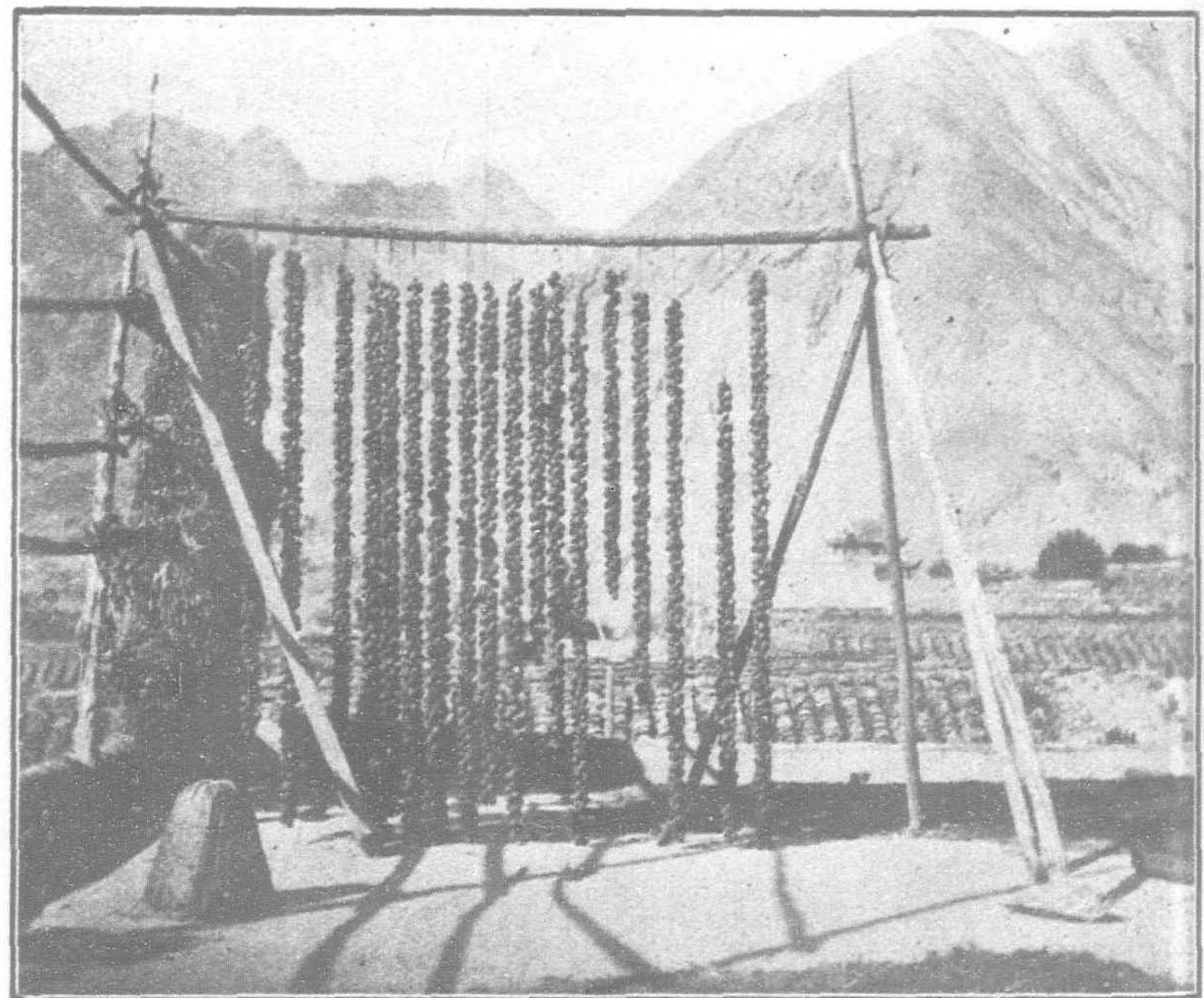
But that is not the most important of the late discoveries of Mr. Meyer, to whom many problems of the farmer of the new world are presented for solution. One of the drawbacks to agriculture in some sections of the United States is the occurrence of droughts that sometimes make irrigation imperative even in regions where ordinarily the rainfall is sufficient to mature the crops. There are also many semi-arid regions where fertile soil goes untillied through lack of crops that will resist drought. California has many such localities and her orchards wage continual warfare with the arid lands that ever encroach upon them. Now the warfare will go against the arid land, for Mr. Meyer has discovered the wild peach, a root stock for the stone fruits, the peach, apricot and plum, which will live and thrive almost without water and on which the horticulturist may bud and graft his luscious fruit-bearing branches and defy the droughts to retard their growth.

Darwin's Theory and the Peach

This discovery of the wild peach by Mr. Meyer will add another chapter to one of the most inspiring ideas that Nine-



A coming Industry—Dried persimmons to take place of fig, as prepared for market by Peking growers



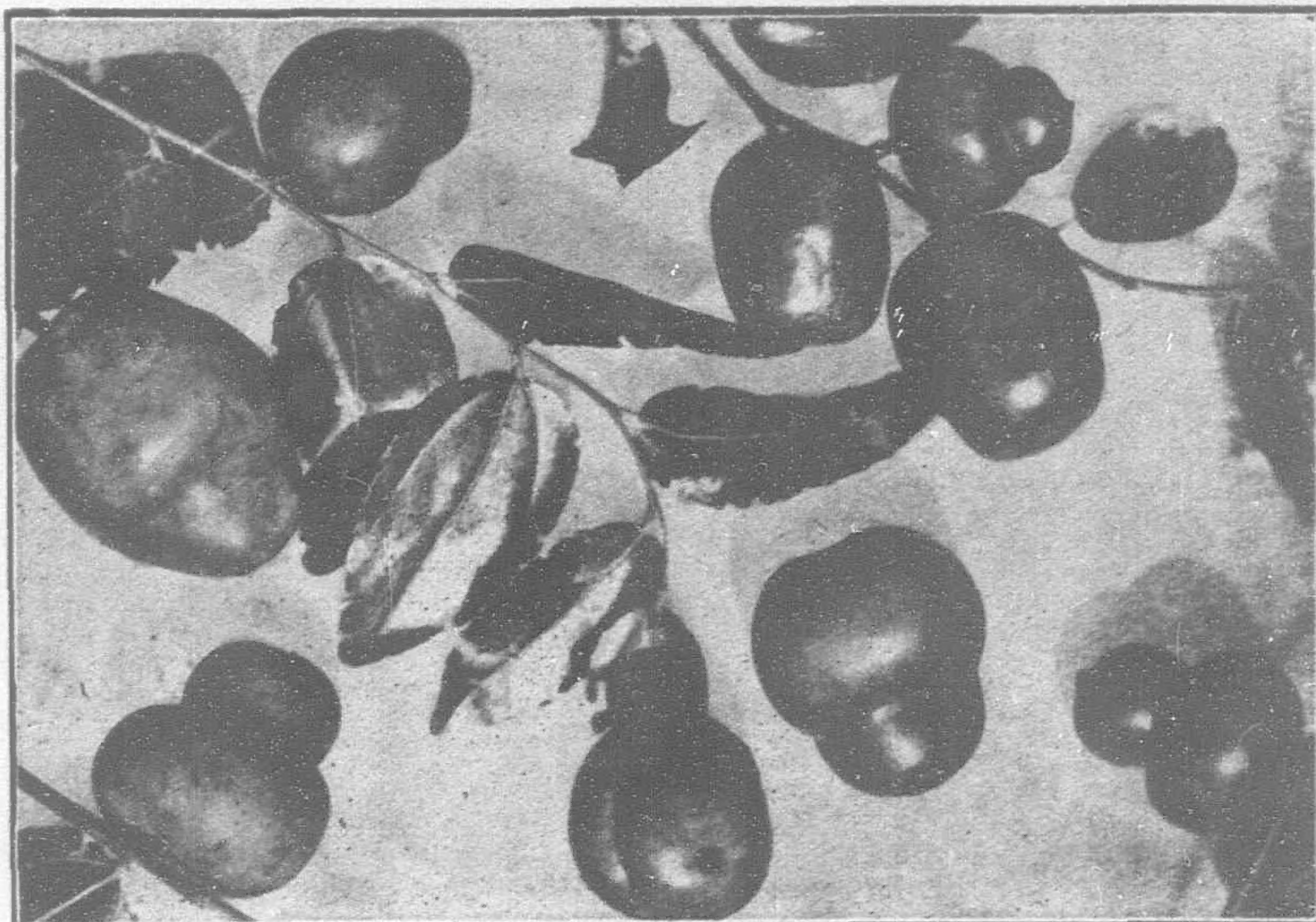
Drying Persimmons on housetop in Siku. S. W., Kansu



Chestnut tree afflicted with blight that is overcoming chestnut of United States. This tree of China is more resistant and may replace American one

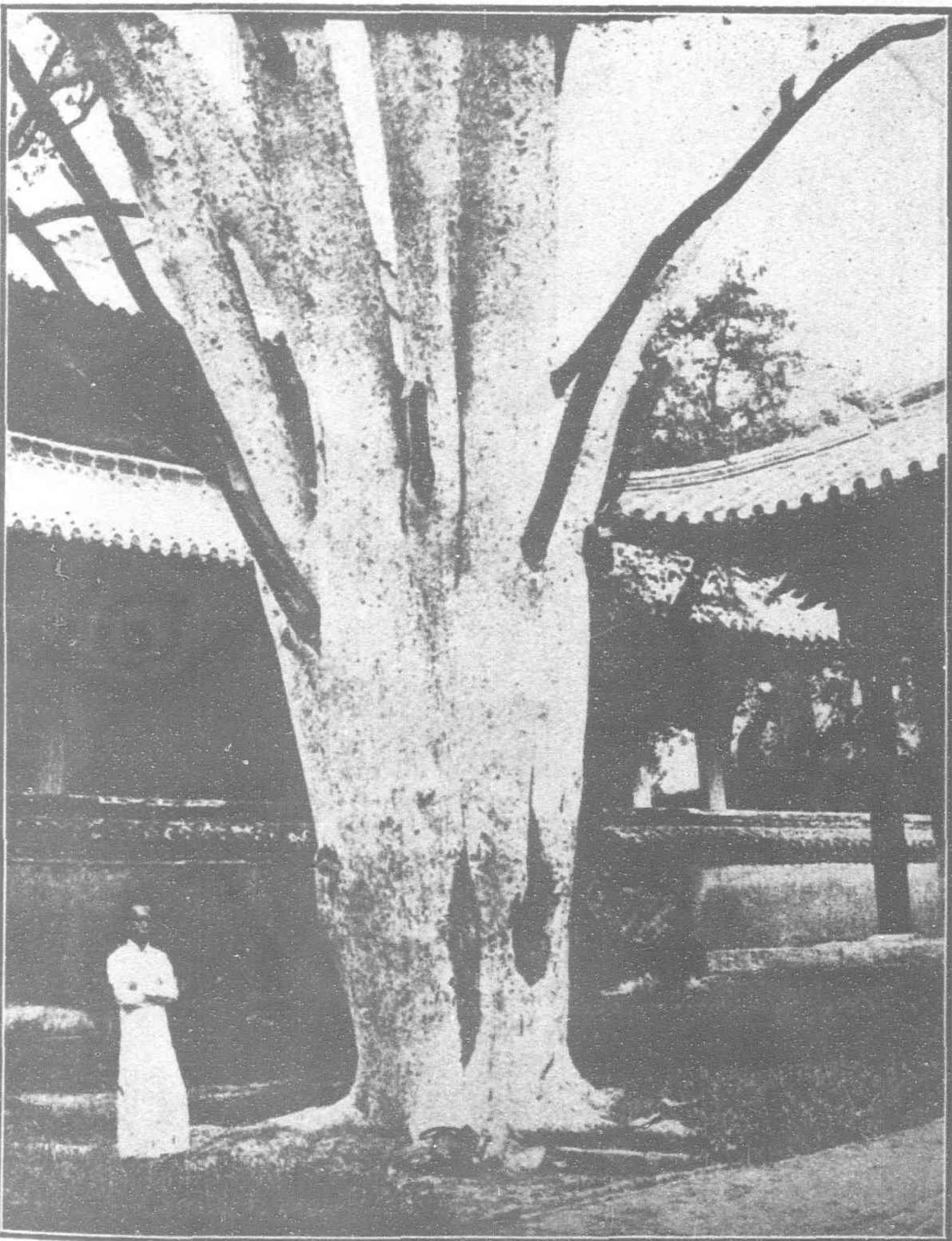
teenth Century science brought forth, for it was around the peach that one of the waves of the Darwinian theory of the "origin of species" eddied and dashed with force enough to wear down even such a durable stone as that of what the scientists call *Prunus persica*. Darwin contended that the peach and the almond were from the same stock and quoted the nectarine as a modification of the peach to prove his theory.

Many years ago, a wild almond was found in Afghanistan that partook of some characteristics of the peach, but it remained for Mr. Meyer to discover the true prototype of the peach on the mountain sides of China. Scientists had argued that the peach

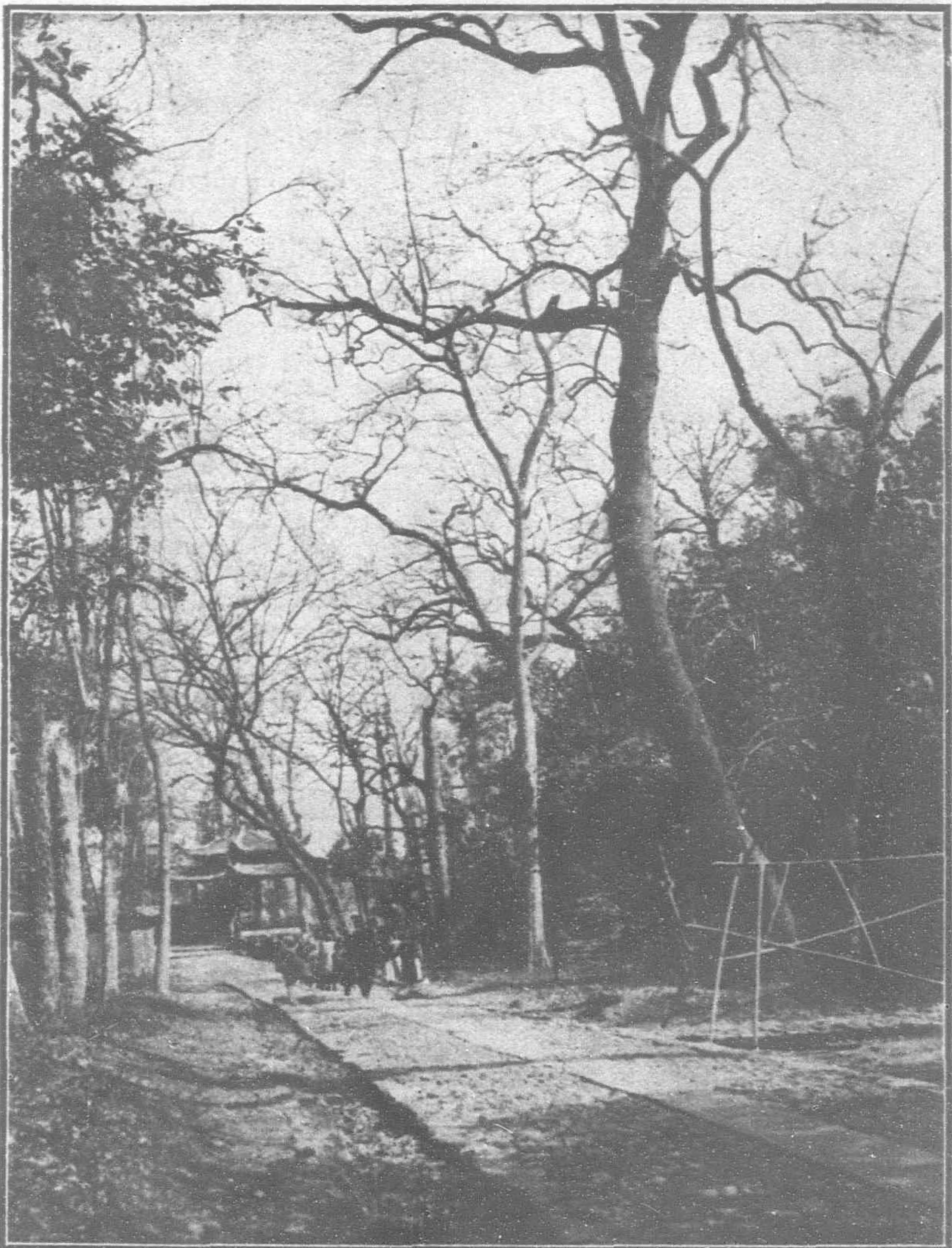


The Mother-in-law Jujube (*Zizyphus sativa*). When dried closely resembles the Persian date

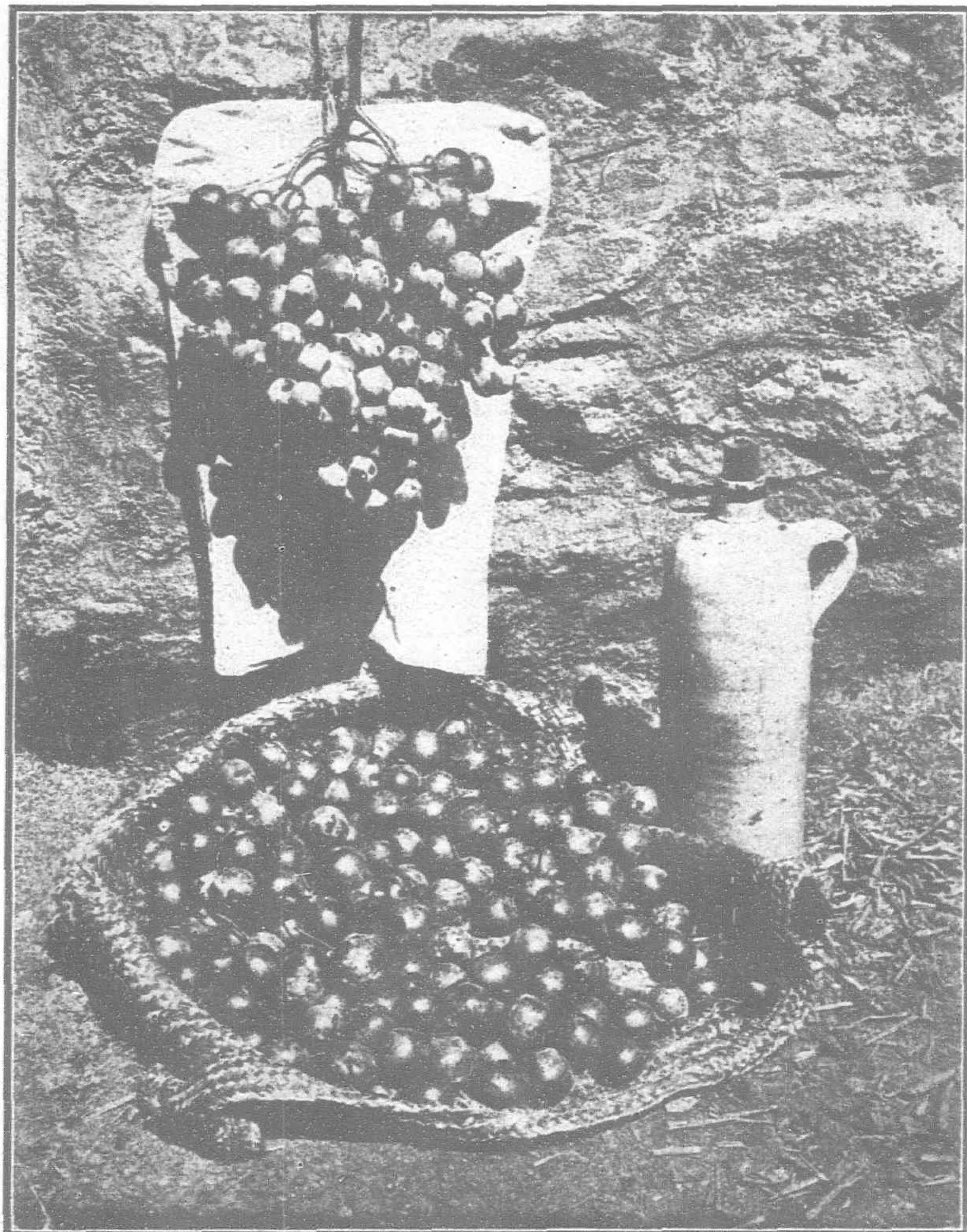
had been tended by the hand of man so long that if this kindly help were withdrawn, the peach would perish from off the earth, dying out in one generation of trees. Such is the case with all highly cultivated plants, a good example being Indian corn or maize, received by the white explorers from the hands of the Incas in substantially its present form of an enclosed ear of grain totally unable to scatter its seeds. It requires carefully regulated conditions to preserve it for the next planting season and its proneness to decay and attack by both insects and animals makes it more dependant upon man than he is upon it.



White Barked Pine Tree (*Pinus bungeana*) in the Birthplace of Confucius, chosen by Ex-Minister W. W. Rockhill to be planted upon his grave



The Tea Chest Tree (*Liquidamber formosana*) blood brother to Sweet Gum Tree of Eastern United States.



Shantung Grapes and Wild Pear (below) the latter to form a resistant stock for grafting U. S. varieties

A resume of the almond and peach Darwinian controversy is given below, although the Darwinian theory is now so securely entrenched that its few surviving opponents will make little gain with the munitions thus provided by Mr. Meyer's discovery of the wild peach. The following statement of the controversy is from the pen of Dr. M. T. Masters:

The history of the peach, almond, and nectarine is interesting and important as regards the question of the origin of species and the production and perpetuation of varieties. As to the origin of the peach two views are held, that of Alphonse de Candolle, who attributes all cultivated varieties to a distinct species, probably of Chinese origin, and that adopted by many naturalists, but more especially by Darwin, who looks upon the peach as a modification of the almond. The importance of the subject demands that a summary of the principal facts and inferences bearing on this question should be given. In the first place, the peach as we now know it has been nowhere recognized in the wild state. In the few instances where it is said to have been found wild the probabilities are that the tree was an escape from cultivation. Aitchison, however, gathered in the Haxardarakht ravine in Afghanistan a form with different-shaped fruit from that of the almond, being larger and flatter. "The surface of the fruit," he observes, "resembles that of the peach in texture and colour; and the nut is quite distinct from that of the wild almond. The whole shrub resembles more what one might consider a wild form of the peach than that of the almond." It is admitted, however, by all competent botanists that the almond is wild in the hotter and drier parts of the Mediterranean and Levantine regions. Aitchison also mentions the almond as wild in some parts of Afghanistan, where it is known to the natives as "bedam," the same word that they apply to the cultivated almond. The branches of the tree are carried by the priests in religious ceremonies. It is not known as a wild plant in China or Japan.

As to the nectarine, of its origin as a variation from the peach there is abundant evidence, as has already been mentioned; it is only requisite to add the very important fact that the seeds of the nectarine, even when that nectarine has been produced by bud variation from a peach, will generally produce nectarines, or, as gardeners say, "come true."

Darwin brings together the records of several cases, not only of gradations between peaches and nectarines, but also of intermediate forms between the peach and the almond. So far as we know, however, no case has yet been recorded of a peach or a nectarine producing an almond, or *vice versa*, although if all have had a common origin such an event might be expected. Thus the botanical evidence seems to indicate that the wild almond is the source of cultivated almonds, peaches, and nectarines, and consequently that the peach was introduced from Asia Minor or Persia, whence the name *Persica* given to the peach; and Aitchison's discovery in Afghanistan of a form which reminded him of a wild peach lends additional force to this view.

On the other hand, Alphonse de Candolle, from philological and other considerations, considers the peach to be of Chinese origin. The peach has not, it is true, been found wild in China, but it has been cultivated there from time immemorial; it has entered into the literature and folk-lore of the people; and it is designated by a distinct name, "to" or "tao," a word found in the writings of Confucius five centuries before Christ, and even in other writings dating from the 10th century before the Christian era. Though now cultivated in India, and almost wild in some parts of the northwest, and, as we have seen probably also in Afghanistan, it has no Sanskrit name; it is not mentioned in the Hebrew text of the Scriptures, nor in the earliest Greek times. Xenophon makes no mention of the peach, though the Ten Thousand must have traversed the country where, according to some, the peach is native, but Theophrastus, a hundred years later, does speak of it as a Persian fruit, and De Candolle suggests that it might have been introduced into Greece by Alexander. According to his view, the seeds of the peach cultivated for ages in China, might have been carried by the Chinese into Kashmir, Bokhara, and Persia between the period of the Sanskrit emigration and the Graeco-Persian period. Once established its cultivation would readily extend westward, or, on the other hand, by Cabul to north-western India, where its cultivation is not ancient. While the peach has been cultivated in China for thousands of years, the almond does not grow wild in that country, and its introduction is supposed not to go back farther than the Christian era.

On the whole, we should be inclined to attribute greater weight to the evidence from botanical sources than to that



Virgin Forest in Northern Korea

derived from philology, particularly since the discovery both of the wild almond and of a form like a wild peach in Afghanistan. It may, however, well be that both peach and almond are derived from some preexisting and now extinct form whose descendants have spread over the whole geographic area mentioned; but of course this is a mere speculation, though indirect evidence in its support might be obtained from the nectarine, of which no mention is made in ancient literature, and which, as we have seen, originates from the peach and reproduces itself by seed, thus offering the characteristics of a species in the act of developing itself.

Aside from its scientific interest, the wild almond-peach will be a boon to the horticulturists in the semi-arid lands as it will form a drought resisting stock on whose friendly trunk will flourish generations of fruits that may eclipse even the peach and the nectarine combined in the eyes of posterity. Not only the peach and the almond, but the plum and apricot and even the cherry can be grafted upon it. These are the so-called stone fruits, as distinguished from the seed fruits such as the pear and apple. For all of the stone fruits this new resistance stock will be available.

China Home of Many Fruits

This discovery of the wild peach has confirmed Mr. Meyer even more strongly in his belief formed several years ago that China is really the home of many fruit trees that we have supposed came originally from Europe, since not only the peach, the almond and the apricot of the stone fruits have Chinese prototypes in a more or less primitive state, but also the pear and the apple, and even some of the nut trees, notably the walnut. This last named tree has so long been called the English walnut in the United States, that its Chinese origin may come as a surprise. As for the apple and pear they also may be extended over semi arid lands, as Mr. Meyer is taking back with him a wild pear from Shantung province that will be tested as a root stock for the seed fruits. But among all these, the wild peach is Mr. Meyer's most notable discovery of the present trip, and it is one which THE FAR EASTERN REVIEW has the honour of first announcing to the world.

Not only fruits but some of the most important flowering plants of the United States have come from China, making their way by slow stages through other countries, which in many cases are credited with being their original habitat. Japan, for example, is widely believed to be the home of the wistaria, but this flower was grown and cultivated in Chinese gardens perhaps a thousand years before the first Chinese pirate set foot on Japanese soil and drove the entering wedge that was to result in the development of the then barbaric Nippon through the kindly efforts of Chinese sages, artists, artificers and philosophers, which last class gave Japan not only the Buddhist but her Shinto religion as well.

Other notable flowers whose origin is China are the camelia and chrysanthemum, an immense variety of primulas and the tree peony, one of the most beautiful of flowering plants. This does not exhaust the list of Chinese gifts to mankind, since the alfalfa, that made so many Kansans rich beyond their wildest dreams in the early days of the settlement of that semi-arid state, also is a native of China, and is distinctly mentioned by a writer in the year 100 A.D., who not only described it, but the grape, the pomegranate and the watermelon, all of which were early inhabitants of the Flowery Kingdom.

The real home of the grape, however, is believed to be Russia-Turkestan rather than China proper, but those who have had opportunity of tasting the splendid grapes grown in Shantung, especially about Chefoo, will admit the ability of the Chinese vitaculturist. They are a true wine grape, and while the Chinese prefer the mild rice spirit known as samshu (very similar in taste to the Japanese saki) the time may come when China will take its place among the wine producing places of the world.

The United States is not the first country to attempt to use China's plant resources, as most of the Chinese flowers that have become so well known in other countries are due to the efforts of a British naturalist named Fortune, who gathered much plant material from the neighbourhood of Chinese cities, which was later used to ornament the gardens of English homes, although many centuries before this endeavour Chinese tea,

which is also a flowering plant of the camelia family, had been introduced into India and Ceylon, and its contribution to these two countries, to say nothing of Formosa and Japan, runs into the millions of dollars annually.

During this present trip, Mr. Meyer has made several discoveries of products that may be of great interest to the exporter as they lie ready to his hand for introduction into the markets of the western world. One of the most important of these is the dried persimmon, which the Chinese of Kansu thread upon strings and hang in the sun on the tops of the flat roofed houses, later compressing the fruits until they are about the size and shape of a dried fig. Many hundreds of tons of these persimmons are consumed in China itself, but the Chinese have always proved equal to any demand for excess production when an export trade is developed. This persimmon is another discovery of economic importance to the United States as well, since it will grow in any of the southern states and is far superior to the home grown varieties for whose ripening the small boy eagerly consults the thermometer at night in the hope that the morning will bring a frost to turn the astringent fruit into one that can be eaten without unduly puckering the tender membrane of the mouth.

New Persimmon for the South

The most important variety of persimmon that Mr. Meyer has found as yet is that known as the grindstone because of its large size. It has another advantage in that it has neither seed nor stone, and the readiness with which it can be dried and transported long distances places it in a class similar to the apricot, so many thousand boxes of which are yearly sent from California to the various southern states, where this new variety of persimmon should thrive as luxuriantly as it does in China, while the persimmon also may prove an excellent substitute for the fig, which it resembles in taste.

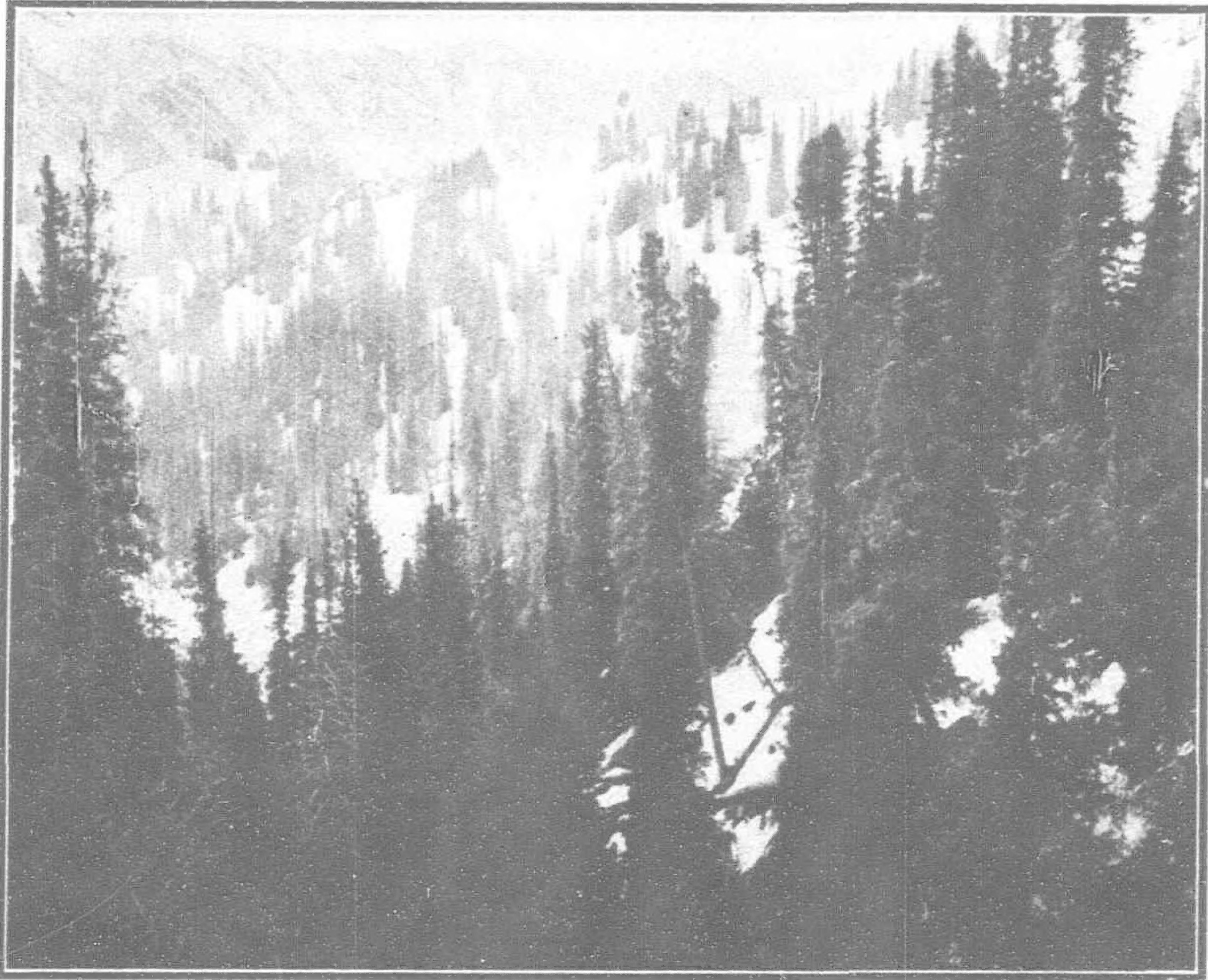
There is another discovery of Mr. Meyer which may take the place of the Arabian date. This is known to commerce as the jujube, and has been supposed to be a native of Turkey, where it is used as the base of a confection which goes into commerce in the United States as jujube paste. A peculiar variety of this fruit has been discovered, which is known as the "Mother-in-law jujube." It is found in only one place in China, in a valley in the state of Shansi, close to the border of Shensi. It is new to the world, as its growth has been restricted to this one locality, and its fruit has been highly prized because of the peculiar shape, which makes it look as if it were about to produce two fruits instead of one. It grows in a semi-arid country, and should do well in Texas, Arizona and California. Some of the other varieties are very large, one of which has a fruit the size of an egg. This variety is quite plentiful, and is made by the Chinese into a delicious preserve that compares favourably with the Persian date.

All these fruits are well enough in their way even as now grown in China, but when subjected to the skill of modern science of the United States horticulturists, the limit of varieties and hybrids that may be produced can scarcely be foreseen, and it is possible that given these wild stocks the U.S. fruit growers may produce varieties infinitely superior to any they now possess.

One of the boons to the housewife that Mr. Meyer's recent explorations has conferred is the odorless cabbage, which is largely cultivated in North China, and which when introduced into the markets of the temperate regions of the United States will abolish all memory of the old familiar cooking recipe that "cabbage should be boiled four hours and four miles from any human habitation," since the Chinese cabbage does not betray its presence in the kitchen and is much finer in texture and more delicious in taste than the present vegetable that forms the chief dish of the rural American's "wash-day dinner."

China's Opium Difficulty

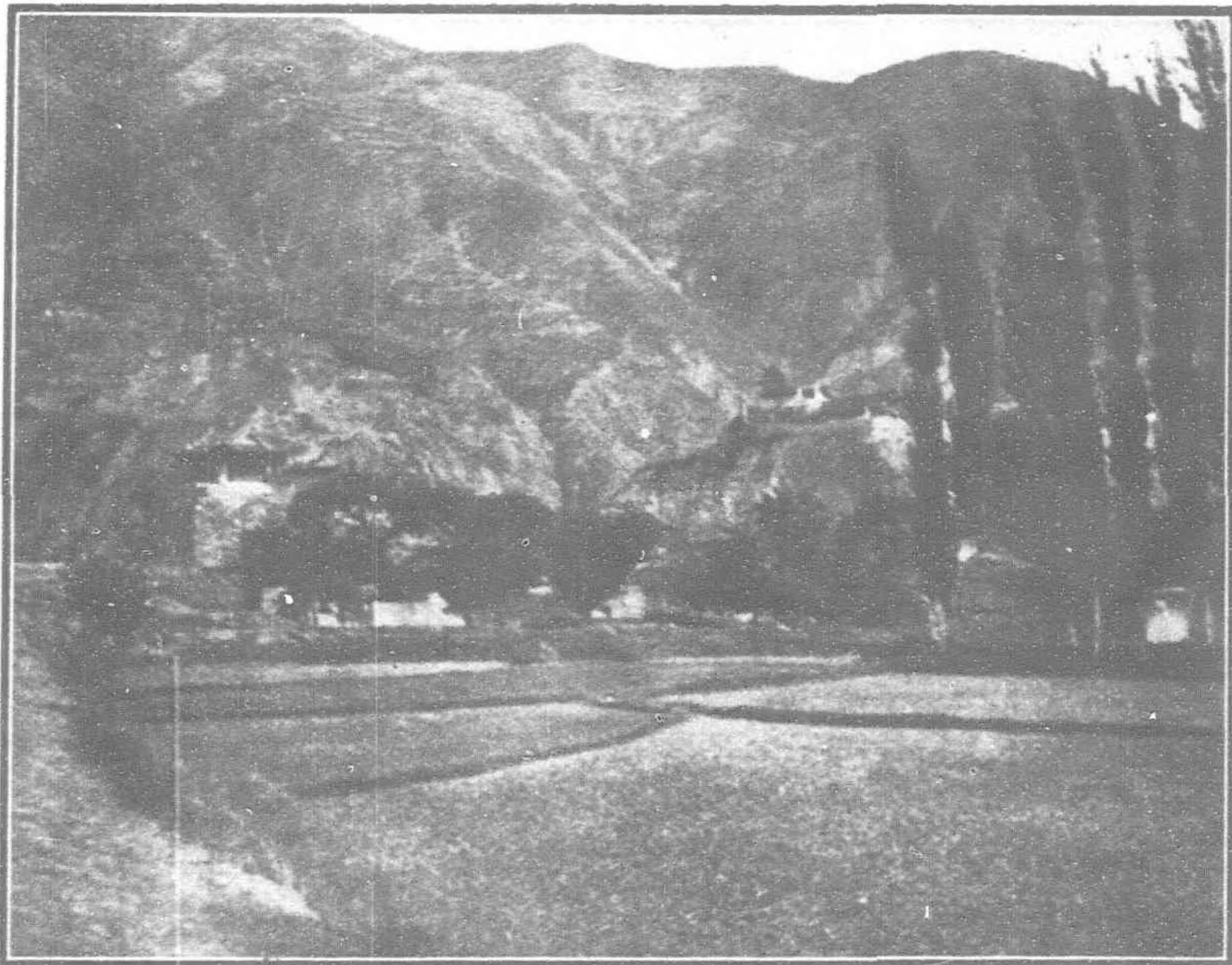
In his search for useful plants Mr. Meyer penetrated almost to the Tibetan border, and in Kansu Province he had ample opportunity of noting the difficulties that beset the Chinese Government, which has been unable to suppress the traffic in



Forested Mountains in Ili Province as yet untouched by man



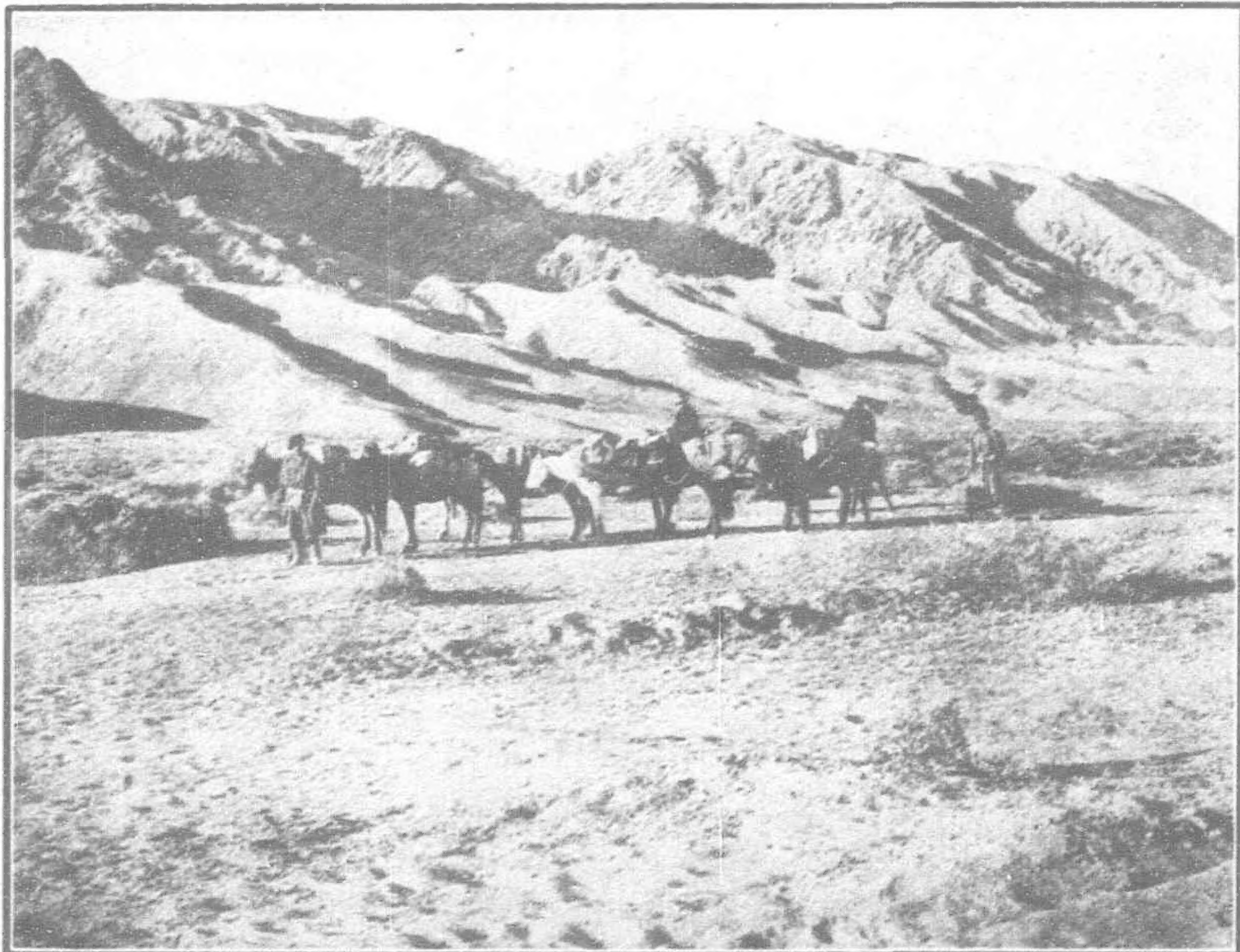
Terraced Mountains in Western Kansu growing broadbeans, hulless barley, hulless oats, peas and flax, 10,000 feet above sea level



Town Gate, denuded mountains and Lombardy Poplars of Chuh-chou in Southwest Kansu



Mountains so utterly deforested that the overburden of earth has been washed away leaving bare rock ribs on which nothing will grow



Explorer's Caravan in Russian Turkistan on road from Osk to Kashgar in Chinese Turkistan



Field of Odorless Cabbage in Kansu Province

opium there. It might be mentioned in this connection that Kansu Province is on the border of Tibet, where there are many valleys as yet untrodden by the white man, the existence of some of them being practically unknown even to the Chinese who live on the eastern slope of the mountains. It is in these mountain valleys that the poppies are grown to supply the opium that is openly sold in the capital of Kansu, in whose remoter valleys the flower also is cultivated to some extent. On several occasions Mr. Meyer saw opium openly sold in front of the yamen (the government building) in Lanchowfu, the capital of Kansu, and there was scarcely a farm house in that neighbourhood that did not have poppy seed heads hung up to dry so that the seeds might later be crushed for the excellent cooking oil which they contain.

This country is quite wild and desolate for the most part, and the difficulties of the Chinese Government in suppressing the growing of opium and the traffic therein might be compared to the troubles the United States Government would have had to face if, in 1850, it had tried to prevent the Indians of the Rocky Mountains from cultivating corn or potatoes, the two regions being closely comparable as regards development and police efficiency.

Opium in Lauchowfu is sold for 1,200 cash (less than \$1. U.S. Currency) an ounce, whereas in Shanghai it sells for \$20. an ounce. This must not be considered as accusing Chinese officials of laxity in a matter in which so many recent edicts have been promulgated, since at every likin (internal customs) station, strict search of all packages is made for opium, with the result that only a small portion of that grown in Kansu and Tibet filters through into other provinces in China, where the growing of the drug can be more readily prohibited and the Government authority enforced.

As far as the northern border of China is concerned it would seem necessary to exterminate the population in order to do away with the use of opium.

Kansu Province is further remarkable for the intensive cultivation that is carried on upon some of its mountain sides. Here is found the highest terraced land in the temperate zone, some of the fields rising to more than 10,000 feet above sea level. Here are grown hullless barley, hullless oats, peas, flax and broad beans, and every inch of available soil is devoted to some crop or other, two or even three being grown in succession, despite the short summer season that there prevails.

Because of this intensive cultivation and the seeming determination of the Chinese to turn every inch of arable soil to some benefit has come about the deforestation of China's mountains, under which policy the farmer has destroyed in time not only the very fields for which the forests were removed, but has permitted the torrential mountain streams to carry down a large quantity of gravel, that gradually has encroached on the more fertile plains below.

But even in this China has been of value to the world and to the United States in particular, for it was while looking over some pictures of China's denuded hillsides that President Roosevelt made the remark that China could teach the world how not to do things as well as how they should be done. These photographs contributed largely towards the inauguration of the conservation movement in the United States, which has led to the preservation of so many thousand square miles of forests, which are of value not only to the future generations, but to the present as well.

During one of his journeys Mr. Meyer had occasion to penetrate into the Ili region, where owing to the exceedingly sparse population, the forests are untouched as yet, and the marked difference in the luxuriant forest growth of that region from the bare hills of the more accessible China, should be sufficient to lead the Chinese Government to inaugurate a far reaching policy of afforestation.

White Pine for Rockhill's Grave

In some of the hills of Kansu, considered to be the outer limit of Chinese civilization, the overburden of earth has been so thoroughly washed from the once forested uplands that the very ribs of the mountains, upon which no blade of grass nor

shrub now may find root, are laid bare. However, despite this general lack of forests, several of China's forest trees are being transplanted by Mr. Meyer, among them one that has a sentimental as well as an economic significance. This is the white pine tree, which flourishes in semi-arid regions and is remarkable for its white bark which is accentuated by the black dead limbs, making it a striking and beautiful tree. By reason of its drought resisting qualities, this tree should aid in extending the timber supply of Arizona, Texas, New Mexico, Nevada and California, and should perpetuate the name of one of the most earnest workers for better and closer relations between the United States and China, the late minister W. W. Rockhill. It was this tree that Mr. Rockhill requested should be planted upon his grave, a request which will be carried out by Mr. Meyer on his return to the United States.

While not strictly a tree, as it is classed among the grasses, the Chinese bamboo through the efforts of Mr. Meyer has gained a strong foothold in the United States, and so widely separated experimental stations as Bakersfield, California, and Brooksville, Florida, now show big groves of this important source of paper, to say nothing of the thousand and one small uses to which it is turned by the skilful hands of the Chinese. From these two centres it is expected that the bamboo will spread over a wide portion of the United States that now grows no tree or plant of so great an economic importance.

Aside from his mistaken policy of deforestation, the Chinese farmer has many traits that are commendable, especially in view of his lack of modern scientific methods. The Chinese farmer is the father of dry-farming and although he uses rude implements that barely scratch the surface of the ground, his knowledge of the proper rotation of crops is such that his fields seldom are without something maturing in the growing season. He arranges his plantings so that while one crop is maturing, another is just pushing through the soil. To grow as much produce as possible and waste as little time about it as he can, is the ideal which the Chinese farmer attains to a degree that would surprise his Western brother whose hopes center in one crop a season and who did not know the first rudiments of rotation until barely a decade ago, although the Chinese had practiced it, as well as the green manuring or plowing under of legumes, for thousands of years.

Yet the Chinese farmer, who has arrived at the conclusions of science by empirical observations alone, has unconsciously been pursuing a process of selection and improvement of his main food crops until he has evolved many varieties that once dependent on copious supplies of water, now grow in semi-arid lands. The many varieties of upland rice which mature on less water than wheat would need to bring its grain to ripeness are examples of this unconscious process. Not only in dry farming, but in irrigation as well, the Chinese farmer as seen by Mr. Meyer on his travels, has shown himself an individual of great resourcefulness, and in some parts of China, with no other material than a handful of bamboo and a log of wood for axle, he has succeeded in erecting huge waterwheels which raise the fluid high above the stream bed to pour it upon the land. Those wheels once started need no attention and their usefulness ends only with the decay of the materials from which they are made. If the Chinese farmer, even without the aids that in the West are considered necessary for success in agriculture, can make such progress and work his land to so much greater advantage, what will he not do when he has Western science to aid? That is a question, Mr. Meyer says, which one can leave to the Chinese farmer, who is the interested party.

Explorer's Hardships in China

Although Mr. Meyer makes light of the dangers which he undergoes and the privations he must suffer, and mentions his difficulties only casually in connection with other things than his own personal comfort, yet the lot of a plant explorer is not light. He must forego not only the ordinary luxuries of life, but almost its every comfort as well. No traveler writing of China has failed to speak of the Chinese inn. It is so overwhelmingly appalling that oftentimes its discomforts so pervade

an author's pages that they spoil what might otherwise have been an interesting book. Therefore, Mr. Meyer considers himself fortunate that his journeys take him into regions where even inns often are absent and where he must depend on the canvas walls of his tent for shelter. This he does not consider a hardship, but this constant exposure, coupled with lack of other than Chinese food makes necessary a rest of several days or even weeks of recuperation after one of his trips. His diet is limited to whatever the Chinese countryside affords, since he cannot carry canned goods to eke out his fare. This is due to the high price of cartage which gradually increases the cost of food stuffs thus transported until they are worth more than their weight in silver, and a pound of silver will take a frugal minded explorer many leagues.

As to personal danger, the plant explorer does not consider it. Even when, on this last journey, he was assured that it was certain death to venture into the Thibetan mountains to the north of Kansu, he was determined to go, but while his spirit was willing the flesh of his bearers was weak and to their untutored minds, the boiling oil vats of the Thibetans were immensely more potent than the extra "cumsha" strings of cash which the explorer held out as a bribe.

Once only during his ten years in the China field has actual personal danger come close or seemed to, for even to this day, the explorer does not know whether his caravan attendants fled from real or imaginary danger. This was in northern Korea, the ancient habitat of the tiger—ten foot tigers, too, that have not become slothful or enervated by easy living as has the tiger of Bengal. As Mr. Meyer tells the story it is not so thrilling as the tale that the then American consul general at Seoul wove from the exploit. The latter's story was that Mr. Meyer was attacked by a tiger and that to escape he had to slide down a mountain side to the destruction of his clothing in his search for personal safety. The official says that the message for help read:

"Attacked by a tiger. Send me some trousers."

Mr. Meyer's statement is that his bearers heard a rustling in the underbrush and fled. He also fled and his wire for assistance was to get new bearers, the thrilling slide for life down the mountainside having been imagined by the official in an effort to relieve the tedium of a consulship in Korea.

If it had been a tiger, Mr. Meyer said he would have regretted it greatly, not because of his own possible death, but on account of the collections he was bringing to civilization which had been gathered at such infinite labor and pains that it would have been a pity, he said, to have had them fall into unusing hands. As for himself, he insists that no man can die more than once and he considers it as easy to die in the open in China as it would be to die while tending the money in a bank. So long as his collections are saved and contribute their quota to the world's wealth, the passing of the explorer does not matter. In Mr. Meyer's creed, it is the work, not the man that counts.

So far as is known, the United States Department of Agriculture is the only governmental bureau now making a systematic exploration of China's plant resources, although other powers have from time to time utilized the discoveries of travelers who were working independently. That the United States was first in the field was due to the wisdom of former Secretary of Agriculture James Wilson, whose successor has continued the policy in this as along other lines.

Probably no activity of the Department of Agriculture has produced greater returns than this introduction of new plants. While posterity will have to pass upon the ultimate value of much of Mr. Meyer's present work, one example of immediate value comes to mind, although not a discovery of the plant explorer. A consul of the United States stationed in Russia heard of a Russian drought-resisting wheat that was growing under conditions that might be paralleled in the United States. After some correspondence with the Department of Agriculture, he obtained a carload of this wheat for seed and shipped it to the United States, the total cost of securing and distributing it being less than \$10,000 Gold. A few years later, the United States exported more than \$2,000,000 worth of this wheat to the very district in Russia from which the seed had come. This is the now famous Durum wheat, and if the custom of erecting memorial arches to public benefactors prevailed in the North-Western part of the United States as it does in China, a fine white marble pailou would now commemorate the name of the consul who made the discovery and had the wit to turn it to the service of his countrymen.

Resources of the Chengtu District.

[Consul E. Carleton Baker, Chungking, Szechwan Province, China.]

The Chengtu district under review comprises an area approximately 100 miles square and includes such cities and market towns as Kien Yang, Lochi, Chiaokiatu, Kwaichow. Sisen, Shi Chiao, Lungchuanyi, and others of less importance. The population of the city of Chengtu, the capital of Szechwan Province, is about 500,000, while the population of the Chengtu district above described is 2,000,000.

The Chengtu district imports a larger quantity and a better class of foreign goods than any other part of Szechwan Province. There are many large shops at Chengtu that handle foreign groceries of all kinds, clothing, shoes, hats, toys, medicines, toilet articles, hardware, and various other household supplies. Foreign wines, cigars, and cigarettes are sold in considerable quantities. Small sewing machines, as well as large ones for manufacturing purposes, are readily disposed of, and cotton gins and several lighting plants have also been sold there recently.

The chief exports of the Chengtu district are hides, silk, herbs for medicine, sugar, salt, bamboo, cotton, and rice. New industries also are starting and are making considerable headway. Cotton cloth is being manufactured to a greater extent, as well as ready-made clothing, hats, shoes, and leather goods of a general character. Many of these exports are sent direct to Japan, but most of them

are sold to merchants in Chungking or Shanghai, who export a certain amount.

Agricultural Resources—

Transportation Facilities Inadequate.

Shi Chiao is noted for sugar, while cotton and rice are shipped largely from Lochi. Rice is grown throughout much of the Chengtu district; the same may be said of sweet potatoes, peanuts, and corn. Oranges, peaches, persimmons, pears, and other fruits are largely grown—oranges chiefly in the vicinity of Chiaokiatu. As the Chengtu plain is watered by an extensive irrigation system it can always be depended upon to supply regular and abundant crops. Wheat, rape, beans, peas, and millet are also grown as staple crops, especially on the plain; oats and buckwheat being likewise cultivated to a certain extent. Enormous quantities of vegetables are produced, chief among which are the turnip, carrot, cabbage, onion, and lettuce. Pepper, ginger, and mustard are largely used as relishes. Tobacco is extensively grown in this district and is now being employed by a foreign company in the manufacture of cigarettes for local consumption.

While there are several small waterways traversing the region under review, they are navigable for large boats only during a certain part of the year. Rail transportation is much needed, and electric lines would probably be best at the present time. American engineers who have recently visited this district state that electric roads could not only be constructed with comparative ease but would prove highly profitable from the

very beginning. Cheap water power could be obtained from the rivers, and the level character of the country would make construction extremely simple. A system of railways would stimulate industry and business to a wonderful degree and would greatly reduce the cost of transportation.

Need of Foreign Machinery.

As the district about Chengtu develops there will be an increasing demand for foreign machinery. Mining machinery is needed in the development of the region west of Kwanhsien, where lead, coal, silver, and copper deposits are said to be extensive. There is also a demand for machinery for the scientific refining of salt and sugar and for the manufacture of paper, shoes, soap, candles, and many other articles. Modern saw-mill machinery will eventually be introduced. Machinery for silk and cotton weaving could be used to advantage; much of the Tibetan wool that comes from Tachienlu to Chengtu could be made into fabrics at the latter city, where labor is cheap and water power available.

A report with regard to the possibility of introducing American machinery was published in Daily Consular and Trade Reports for October 21, 1913, and another report on this subject was sent from this office on March 16, 1914 [and appeared, as Foreign Opportunity No. 13037, in the issue for May 8, 1914]. A tannery with modern methods has already been established at Chengtu, but a larger plant is needed, and a considerable amount of foreign machinery will, no doubt, be added to the present equipment.

THE PHOSPHATE DEPOSITS OF ANGAUR ISLAND

SPOILS OF WAR OMITTED BY JAPAN FROM HER LIST OF TROPHIES GAINED BY HER CAMPAIGN AGAINST GERMAN POSSESSIONS IN THE PACIFIC

Japanese newspapers recently have contained what purported to be lists of property that had fallen into their hands as the result of the campaign that ended with the occupation, not only of the German stronghold at Tsingtau, but some of the Islands of the Pacific, Yap and its cable station, the Mariannas with their resources of copra, pearl shell and sea products, and the Pelew group with its many barren atolls that for the most part barely supported the few hundred natives who had their homes there. Perhaps this reticence as to the value of the Pelew Group was due to a desire not to call too strongly to mind the occupation of these islands by the Japanese in view of several announcements that these specks of dry land in the Pacific were to be handed over to Australia or at least not to become permanent Japanese possessions. In view of these statements, the sending of several expeditions of scientists to study the resources of the "South Sea Islands," which the newspaper accounts of the expeditions gave out as their general destination, would seem to indicate an effort on the part of the conquerors to obtain a preeminent place in the trade of the islands whether they retained the suzerainty or not.

One island which did not have to be explored and whose resources met with instant appreciation on the part of the new occupants was Angaur Island, the southernmost of the Pelew Group, which contains a phosphate deposit that is not only one of the largest island deposits in the world, but also probably the purest and most accessible to Japan. The value of this island was not underrated by the Japanese, whose imports of fertilizer materials reach an enormous annual total in bean cake and meal from Manchuria, as well as in bone and other phosphorous bearing substances. Nor did any outlay have to be made to put the island in condition for exploitation, since it had been worked from 1909 by the German Southsea Phosphate Company of Bremen, whose huge expenditures had put the industry on a paying basis only the year before the outbreak of the war, when a dividend was declared amounting to 11 per cent for the operations of the year 1913.

Angaur Island is located in 7 degrees north latitude and 134 East of Greenwich. It is some two and one-half nautical miles long, and averages a mile in breadth. While the average elevation above sea level is only 16 feet, a rocky knoll at the northern end is above 100 feet high. When the German company was formed in 1908, the island was densely wooded, some of the trees being remarkably beautiful, and included several varieties of banyan and the barringtonia species. Its inhabitants, numbering 150 men, women and children, were of a Malay stock mixed with Papuan blood and were thoroughly unspoiled by contact with the white race, since the island held out little inducements as a port of call for the itinerant trading vessels of the Pacific. A survey of the island had previously disclosed the existence of a deposit of tri-calcium phosphate that the first surveys proved to measure up into the millions of tons. The analyses showed its purity to be 88 or 90 per cent.

The deposit was found to lie upon pinnacles of coral rock which interfered with, but did not prevent, mining by open cut methods. After the ground had been cleared of the overburden of timber and leafmould, debris of the tropical forest growth, light railway tracks were laid from the point where the drying kilns and warehouses were to be located, and the deposit excavated in a series of benches that were gradually worked down to the level of the tips of the coral rocks, the workmen excavating around and between these spurs until the bare coral rock beneath was stripped of its last pound of phosphate material. The work was done systematically and thoroughly, and the production rose steadily from that produced by the able-bodied men among the original inhabitants until, at the time when the Japanese took possession, the output was approximately 100,000 tons, and more than 800 workmen, including 70 Chinese artisans, were employed. The first shipment was made on Christmas eve, 1909,

coincident with the opening of the wireless station at Yap, so that the stockholders of the company were advised at breakfast next morning that their mine was in the list of shippers.

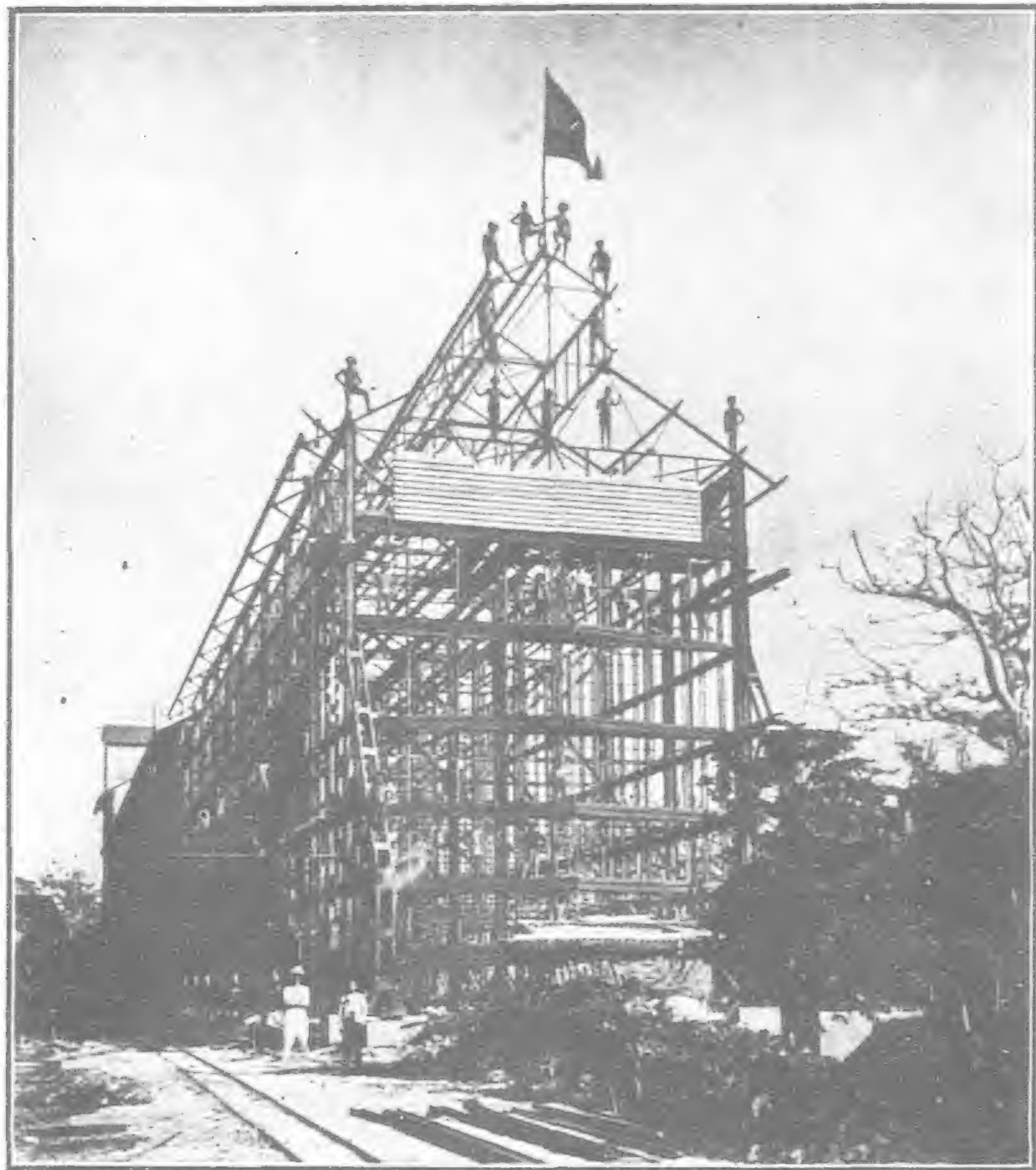
This result was not attained without first having to overcome serious mechanical difficulties in drying the raw material. Instead of being in a more or less rocky formation, it was found to be of the consistency of pipeclay and contained as high as 27 per cent of water. Before shipments could be made, it had to be dried down to under two per cent and this necessitated the construction of costly kilns or rotary dryers. The plant contained three pairs of huge tubular dryers whose combined output was some 700 tons a day. Even more serious was the shipping problem, for Angaur Island has no anchorage worthy the name. It is swept by almost every typhoon that arises in the group and even in windless weather, is the center of strong currents that make anchorage a matter of great danger, owing to the rapidity with which the depth of water increases close to the shore. At first, the steamers were provided with buoys to which to tie up, and these were moored in a depth of 110 fathoms although only 150 fathoms from the shore. Loading was done through open boats

manned by the natives, and even these could not be loaded directly owing to the surf, but were filled by means of cantilever cranes projecting far enough to save the boats from being dashed against the overhanging rocky walls of the shore line. This system was exceedingly slow and costly and necessitated a much larger force of natives than the company was able to maintain, as recruiting labor was a slow process and one which necessitated the training of the laborer for long periods before he was able to work efficiently.

To obviate this difficulty, which was restricting the output of the island, it was determined to build a loading pier which would be practically automatic in its working, cut down labor charges to minimum and enable the tramp steamers to complete their cargoes with a minimum of delay. Here too, much mechanical ingenuity was brought into play, for there was no



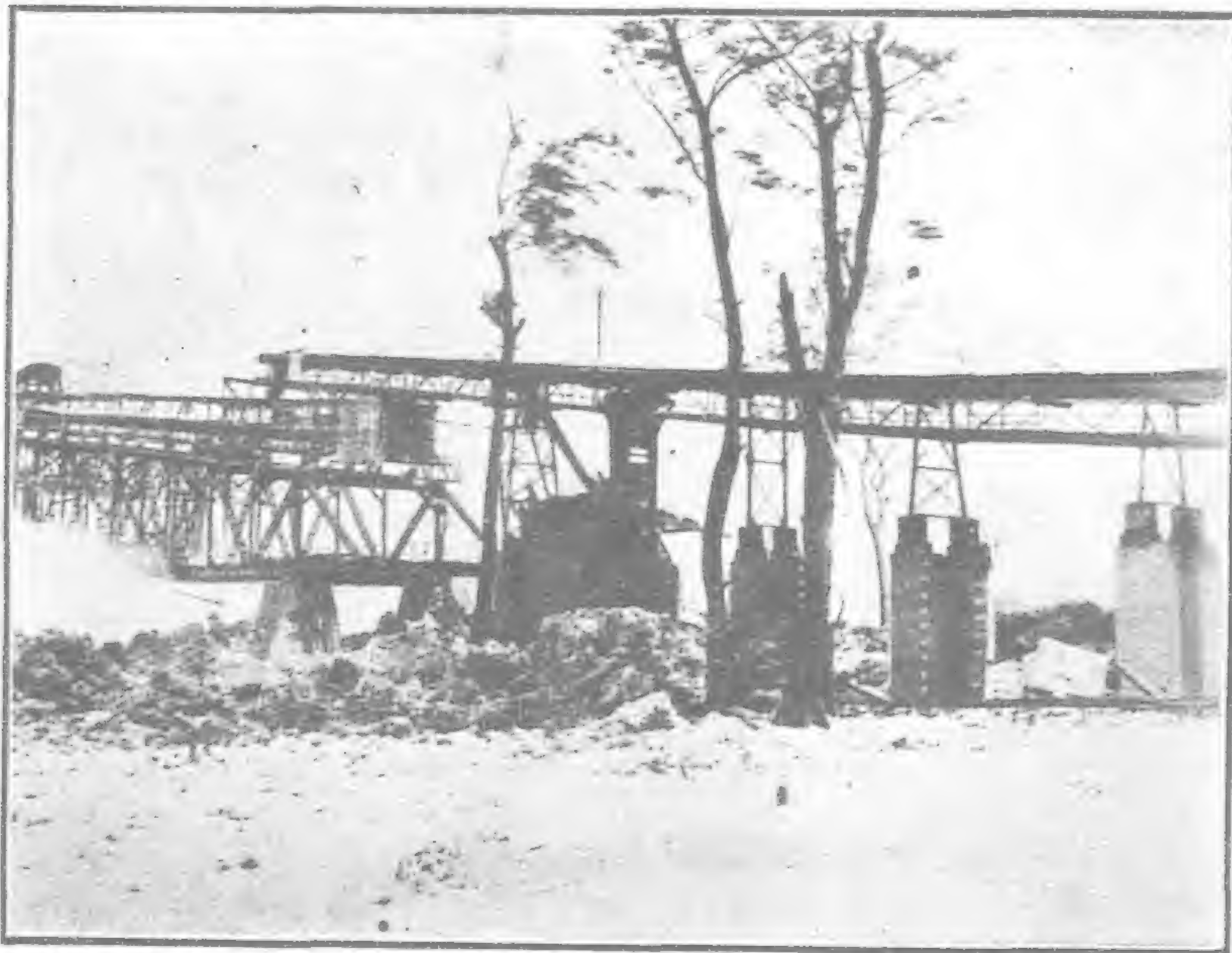
PHOSPHATE STEAMER LOADING AT WEST CANTILEVER



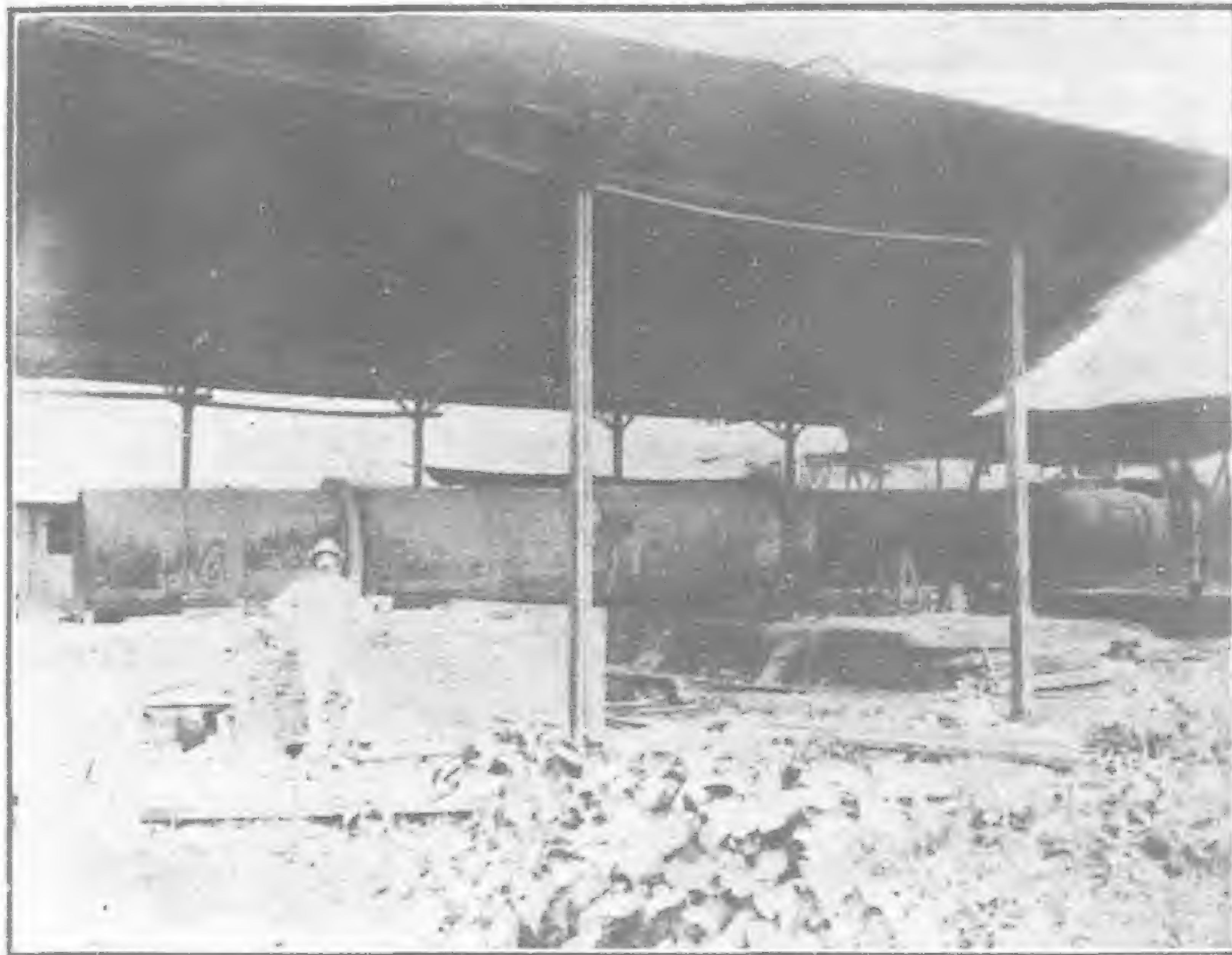
STEEL WORK FOR PHOSPHATE STOREHOUSE ERECTED BY NATIVE LABOR



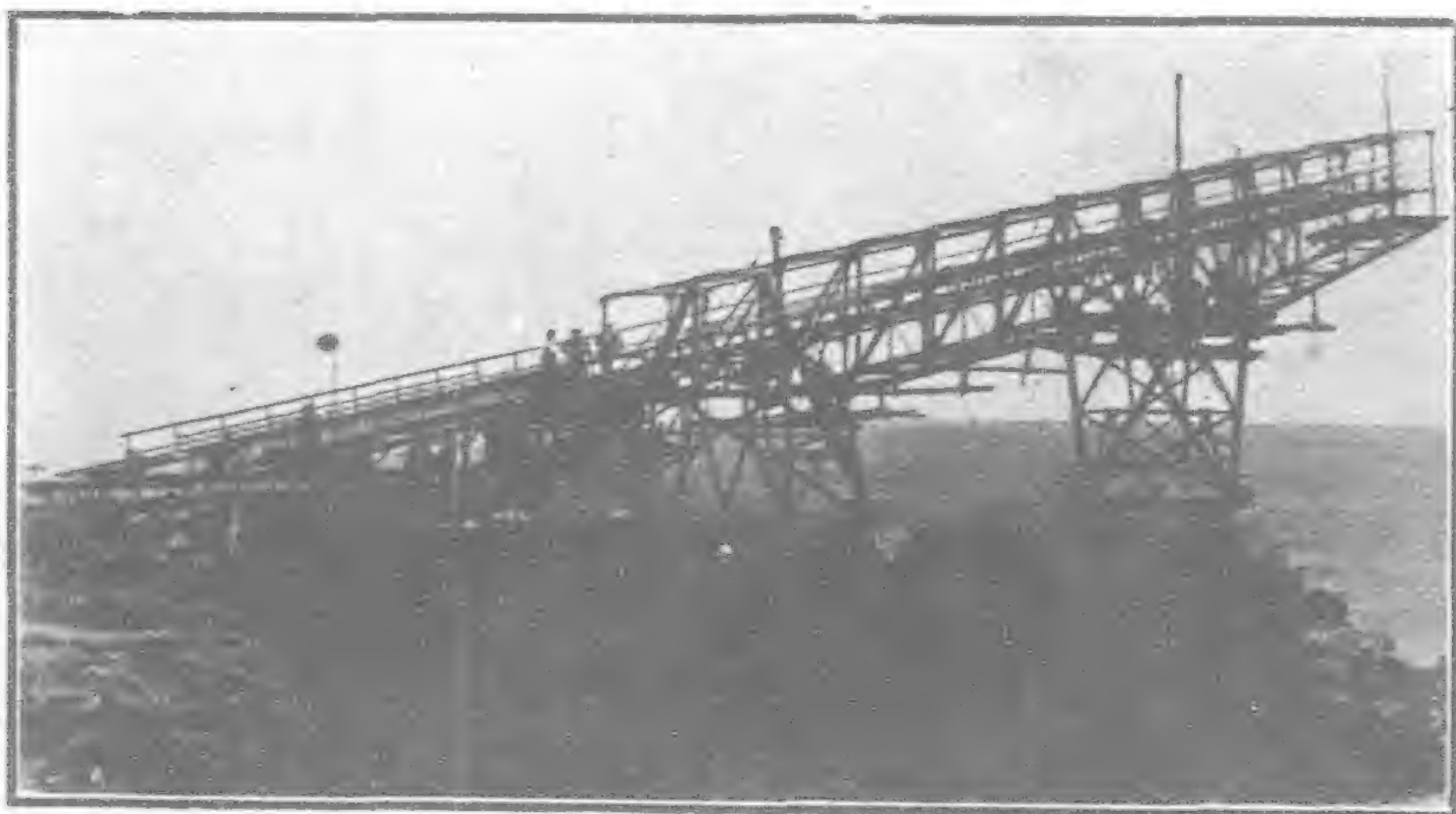
WHARF DESTROYED BY TYPHOON WITH FORMER LOADING CRANE



WEST CANTILEVER AFTER TYPHOON—BEACH SAND LINE FORMERLY RAN TO TOP OF CONCRETE PIERS



PHOSPHATE DRYING PLANT UNDER CONSTRUCTION AT ANGAUR ISLAND



LOADING END OF EAST CANTILEVER (UNFINISHED)



ANGAUR ISLAND WOMAN'S CLUB ASSEMBLED TO MEET EUROPEAN GUESTS

suitable stretch of ground that lay in a straight line with the point where the steamers could come alongside the structure with least likelihood of danger, and this necessitated building the loading structure with skew. This was for the western side of the island and, when completed, enabled the dried phosphate to be run from the storehouses upon belt conveyors out over the sea to the vessel into whose holds it was loaded through telescopic steel tubes. The system worked so perfectly and was such an improvement over the open boat method, in point of time and labor costs, that it was decided to build a similar structure on the eastern side of the island so that boat loading would be unnecessary at any season. This would obviate the difficulty caused by the peculiar weather conditions in this part of the South seas where a southwest monsoon blows from July to December and the northeast trade wind from January to July. The monsoon period is further aggravated by a rainfall which averages 146 inches a season. The second loading device was nearing completion when the Japanese arrived and ended operations so far as the German company was concerned.

The last shipment made under the German Company's direction was in July. In August the steamer *Clan MacNaughton* called for cargo but was compelled to leave on account of the outbreak of the war. This ship later met her dreadful if glorious end as an armed cruiser in the North Sea. In September the Australian Cruiser *Sydney* appeared and after destroying the wireless station, departed on her cruise in search of the *Emden*. Despite the cutting off of the island, the Manager of the Mine, Mr. G. H. Lippert, decided to go on with building operations and keep the mine working as long as the provisions for the laborers would last. In October, the Japanese descended upon the island and a month later, removed the German employees, of whom some 20 were on the company's payroll, taking them to Nagasaki as prisoners. They were later released and permitted to come to Shanghai.

As the island was taken by the Japanese navy and as no prize money could accrue as in the case of a captured ship, the commercially disposed among the naval men evolved a scheme whereby the island was to be declared a naval property and leased to a Japanese company which would pay an export duty on every ton of phosphate removed, this tax to go into the coffers of the navy as a war fund. This mode of disposing of a private property did not meet with the approval of the German Manager of the company's work, but his protest that this was private property and not at all engaged in the production of contraband of war was unheeded, and at last advices, the navy's plan was in full operation.

The German staff was given 24 hours' notice to leave the island which they did as prisoners of war. The reason for this haste was not apparent at the time although it has now been learned that the day after the departure came the new Japanese company's staff, some 20 men, who took possession of the houses of the former managers and after shipping the furniture of the Germans to Japan, made themselves comfortable on the floors of the rooms. In the office they broke open desks and safes, and burned part of the company's books. All stores and spare parts were gone over and those that were not immediately useful were sent to Japan. The value of these stores ran into a considerable sum as every part of the plant was in duplicate in case of breakdowns, because of the great distance from a base of supplies.

This important matter of salvage disposed of, the Japanese started to learn how to run the plant, making the former Chinese employees their teachers. Under their direction, the phosphate in store was loaded for shipment and mining actively resumed with the result that by the middle of June, six tramp steamers

carrying an aggregate of 35,000 tons had been dispatched to Japan. Only those parts of the plant actually in use were cared for, the remainder, including all unfinished construction, being allowed to go to rust and ruin, a rapid process in that tropical climate.

Upwards of 120 Japanese coolies had been brought in up to June 1, and the managers are endeavoring to recruit natives to take the place of those who left when Japanese rule began to become too strenuous. They are having little difficulty as a saki plant has been set up and most of the natives are keen on spirits, which the Japanese sell indiscriminately. Liquor was forbidden to the natives under heavy penalty by the Germans, who had found that islands where white traders had exchanged spirits for native goods, were soon depopulated.

Contrary to the expectations in opening the deposit, the German Company had little difficulty in securing workers to run the locomotive engines and various other machines, nor was labor lacking for the erection of the buildings, which were of steel and sheet-iron construction, some of them of considerable magnitude.

In fact, in the later years of the work, it was hard to recruit the natives of the nearby islands for anything but such work, as those from Yap invariably specified that they should be employed on machinery. Some of the natives were exceedingly quick to learn and after two weeks' training were competent to run the small locomotives that hauled the trains of phosphate from the workings to the dryer. They became so expert in steel work and even in the reading of blue-prints that when shown the position of any desired beam or girder on the print, they would note the dimensions and unhesitatingly shake it out of the tangled piles of material. Some of them were credited by the construction engineer with knowing the location of every bit of steel for the completed building before the first uprights had been erected.

The natives at first were found to be rather sluggish and slow in their movements and an investigation was made of their blood, revealing the presence of ankylostomum, or hookworm, with which practically every one of them was infected. This was met by the company with a systematic treatment in a hospital plant with thymol

and other appropriate remedies. The natives soon saw the effect of this treatment and asked only that they be allowed to look through the microscope of the physician to see with their own eyes the worms that were swimming about in their blood. In this work, the company assisted the German government in its efforts to eradicate the disease from the whole archipelago. With the exception of one island, on which the natives murdered several German missionaries, they were peaceable as children and as long as their peculiarities were humored, were happy in the work. They showed some peculiarities of diet, one of which was an inordinate fondness for dog biscuit, in which they were abetted by one of the recruiting natives who cornered the market of this delicacy, retailing it for the equivalent of six-pence a cake.

The latest estimate of the amount of available phosphate on the island fixed it at 4,000,000 tons and as this was worth on the outbreak of the war some 60 shillings a ton, the island has a potential value of £12,000,000. It was the expectation of the company, that nearly double its dividend could be declared in 1914 and future returns be at even a higher rate, so that the value of this asset as spoils of war is sufficient to warrant its inclusion in the list of trophies to which the enterprising Japanese claims to have acquired title, temporary at least, through his investment of Tsingtau. As to the present disposition of Angaur Island, it would appear that the Australian forces who destroyed the wireless station were entitled to some share in the profit that is now going to the Japanese navy under the agreement with the company of its own nationality.



LABOR LEADER WHO INTRODUCED THE FAD OF EATING DOG BISCUITS

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PROGRESS OF CHINA'S RAILWAYS

Sweeping changes have recently been made in regard to the management of many of the most important of China's operating railways. Special interest, therefore, attaches to the record of progress made by these lines and in the general administration of railways in China in the last few years. With the exception of the Peking-Kalgan line and its extension and one or two short lines the railways in China were built under the supervision of foreign engineers-in-chief, and are operated with the assistance of foreign engineers, accountants, and, in some cases, general managers. As a rule there is a Chinese Managing Director who is responsible to the Ministry of Communications for the working of the line under his control.

The Peking-Mukden Railway was the first important line to be operated in China. Although opened to traffic some time before the Boxer Outbreak in 1900, the official statistics that are available begin with the year 1902-03. The net earnings in that year were approximately 5 per cent. on the capital cost. The following year they were over 7 per cent. of the capital cost and the rate of progress thereafter was as follows. 1905, 20.89; 1906, 18.25; 1907, 13.04; 1908, 16.67; 1909, 20.40; 1910, 15.53; 1911, 16.70; 1912, 19.50; 1913, 18.58. The net revenue increased from \$3,403,933 in 1904 to \$8,817,942 in 1913. This is undoubtedly a magnificent record. During the ten years ended 1913 the railway has been earning a net revenue equal to about 17 per cent. on the total capital investment. The management of the railway has always made a point of charging expenses for maintenance and additions and betterments to revenue to the greatest possible extent, so that the results indicated are, if anything, too conservative. The mileage of the main line is 523 and branch line 84. A point about this railway that deserves notice is the excellent condition in which the permanent way and the rolling stock has been maintained.

The Peking-Kalgan, or, more properly, the Peking-Suiyuan, line is, as already remarked, the only line of importance that was financed with Chinese capital and built by Chinese engineers. From Peking to Suiyuan is about 400 miles, but the line is as yet only open for about 200 miles. The railway connects with the Peking-Hankow and Peking-Mukden systems at Fengtai, near Peking. Great engineering difficulties were encountered in constructing the section from Fengtai to Kalgan, much tunnelling, cutting and bridging being necessary. The fact that only a portion of the line is open to traffic has to be borne in mind when considering the financial results that have been attained. The section of the line from Kalgan to Changsui was only opened in 1913, so the following figures are only for about 125 miles, the section between Peking and Kalgan. This section was opened to traffic in 1909, but it did not begin to earn profits until the following year when the net revenue was \$75,395, or one per cent. of the capital cost. In 1911 the net revenue was \$508,794, 6 per cent. of the capital cost; in 1912 \$1,289,670, 17 per cent. of the capital cost, while in 1913 the net revenue had increased to \$1,567,370 which represents 20 per cent. of the capital cost. These excellent results are likely to be considerably improved when the full length of the railway is open to traffic. That this line is being economically handled is shown by the fact that in 1913 when the gross revenue was \$2,865,394 the operating expenses, including all charges for maintenance, were \$1,298,024.

The length of the Peking-Hankow Railway is about 800 miles. It was begun in 1897 and opened to traffic in December, 1905. This line, which is one of the most important in China, will eventually be linked up with the Hankow-Canton Railway and thus render possible rail transportation from the South of China to Europe. The earnings of the line were affected by the Revolution and the rebellion in 1913 when for long periods it was largely employed for military purposes. Even when it was not being so used the disordered and dangerous conditions that prevailed reduced passenger and freight traffic to a very considerable extent.

The following table shows the financial results attained by the Peking-Hankow Railway in the five years beginning 1909 and ending in 1913.

Year	Operating Revenue	Operating Expenses	Net Revenue
1909	\$11,114,514	\$6,849,557	\$4,265,057
1910	12,242,858	7,341,907	4,900,951
1911	11,398,460	8,563,249	2,835,211
1912	13,656,618	7,356,457	6,300,161
1913	16,774,794	9,226,203	7,548,591

Detailed figures for the period under review in regard to the Tientsin-Pukow and some other operating railways are not immediately available, but the operating results of all the railways in China, as shown by an official return prepared by the Ministry of Communications, are highly favourable. The following table shows the operating results of all railways completed by 1909 for five years.

Year	Operating Revenue	Operating Expenses	Net Revenue	Proportion of net Revenue to total Capital.
1909	\$27,117,820	\$17,780,915	\$ 9,336,905	4. 6 %
1910	29,149,691	18,273,079	10,876,612	5. 4 %
1911	28,185,699	19,673,162	8,512,537	4. 2 %
1912	34,782,513	18,687,967	16,094,546	8. 0 %
1913	39,420,686	22,774,523	16,646,163	8. 3 %

It has to be borne in mind that in many cases the revenue is derived from short sections of incomplete systems, and that consequently much better results can be confidently expected in the future if the recent change in management does not prove detrimental.

Passing from the earnings of the railways, it is of interest to consider what has been done to improve the general administration. Owing to the unique conditions in which China's railways were built and are operated, the work of systematizing the administration of the railways has presented extraordinary difficulties. As an illustration, the compilation of railway accounts and statistics, obviously a matter of the very first importance, was carried out by the officials of each railway in the manner that they personally deemed the best. The systems of accounts that were in vogue were the English, Indian, Belgian, German, Japanese and Chinese, and in some cases the railway administration changed the system from year to year. The financial year of different railways ended on different dates. As a result it was next to impossible to determine the actual condition of the railways and the progress they had made at the end of each year. The confusion caused by this lack of system was recognised by the Republican Government and steps were taken to secure uniformity. A commission consisting of experienced accounting officers of the Central Government and the chief accountants of the existing railways was appointed in 1913 to prepare a scheme for the unification of railway accounts

and statistics. Dr. Henry C. Adams, the well-known American expert, was appointed adviser. After very exhaustive investigations the Commission was able to propose a system of accounts and statistics specially adapted to the needs of the country, which met with approval and was put into operation. The benefit of this uniform system has already been felt, and its advantages will become still more apparent as time goes on.

Unification of engineering standards is also recognised to be highly desirable and steps are being taken in this direction. The same causes that operated to create diversity in the accounting systems has prevented any uniformity of engineering standards. Readers of the FAR EASTERN REVIEW will recall our constant allusions to the imperative necessity of the adoption of a definite standard.

Among other reforms that have been carried out, one of the more important was in regard to through traffic. Passengers and goods may now be transported from any point on any one of the connecting lines to that of any of the other lines, thus bringing China in line with other countries. Through traffic arrangements have been made not only between lines in China, but with International Railway Managements. Considerable improvement has also been made in the passenger accommodation on the railways, particularly in regard to the third class passenger coaches.

Much has been accomplished and much more would have been done had not progress been checked by the stringency of funds. Speaking broadly it may be said that all reforms cost money and, unfortunately, the circumstances of the country prevent more than a limited proportion of the railway earnings being spent in administrative reforms. But, notwithstanding the financial difficulties, good results can be achieved by steady adherence to a settled policy. The factor that would be most likely to prevent effective reform would be the importation of politics into the railway administration. The railway should be run as a business concern and the best qualified men employed and given reasonable security of tenure in their posts. Many reforms can only be carried out gradually after patient investigation extending over long periods. The necessity for such reforms is recognised as a result of experience and it is, therefore, essential that responsible officials should, as far as possible, be maintained in their positions in order to obtain the best results from their activities. An official's interest in his work is largely dependent upon the knowledge that he is likely to be permanently associated therewith, and encouragement to suggest and carry out reforms is given by the belief that such reforms will be accomplished under his observation and direction.

THE RESOURCES OF CHINA

The Work of the Newly-Created Commercial and Industrial Commission.

In almost every standard work relating to China, the greatest stress is laid upon the "illimitable resources" of the country. Occupying nearly a twelfth part of the land surface of the world, with every variety of climate, and possessing a vast population of frugal and unremittingly industrious people, the word "illimitable" seems hardly misplaced. But, although Chinese and foreign writers have joined in inviting the world to wonder at the vast resources of China, they have invariably dealt in generalities. The industry of the people, the wealth of minerals, the variety of agricultural products, have been referred to in general terms, but it may safely be said that there is less specific information available about the resources of China than of any other country of importance.

An essential preliminary to the proper development of the productive industries of China is systematic investigation and tabulation of all obtainable data. The importance of beginning this work at the earliest possible moment was recognised by His Excellency Chow Tze-chi, the Minister of Commerce, Industry and Agriculture, and upon his initiative the President has approved the establishment of the Commercial and Industrial Commission to which reference was made in the last issue of the

FAR EASTERN REVIEW. The proposals made by Mr. Chow Tze-chi and approved by the Government were designed to confer upon the Commission sufficient power to collect and disseminate information calculated to improve China's industrial condition. The creation of this Commission with ample powers is one of the healthiest signs of progress that the Republic has yet given and there is every reason to expect that it will achieve results that will conserve and increase the wealth of the country and thus firmly establish the base for political development, improvement and consolidation. The wealthiest countries in the world are those which have paid the most sedulous attention to the collection of data relating to their industries and commerce and have thus been enabled to direct the energies of the people into the most productive channels. That China has adopted a similar policy is a proof that the irrational conservatism of the past has been abandoned, and that the most important of all her Ministries has adopted the modern methods that have brought success and prosperity to the leading industrial nations of to-day.

In view of the importance of the Commercial and Industrial Commission it is desirable to explain in detail its organization

and objects. As mentioned in the last issue of the FAR EASTERN REVIEW, it is composed of three main divisions which are under the direct supervision of the Chairman and Vice-Chairman who compose the Executive Committee. The work of the three divisions will be divided by allotting one division to each member of the Executive Committee to receive his special attention and direction.

The Chairman of the Commission will be the supervising Commissioner of the division of commercial and industrial exhibits; one Vice-Chairman the supervising Commissioner of the division of commercial and industrial information, and the other the supervising Commissioner of the division of commercial and industrial experimentation.

The general affairs department will be under the direct supervision of the supervising Commissioner of commercial and industrial experimentation, and this department will be composed of the following three sub-divisions—(a) Managerial, (b) Treasural, and (c) Secretarial.

For the present, work has been confined to the division of commercial and industrial information and the general affairs department. It has been deemed wise to organize one department at a time, and with the approval of the Executive Committee the division of commercial and industrial information has had the sole attention of all those connected with the work of the Commission.

The division of information is under Mr. Chang Ying-hau, who is the chief of the division, having been appointed by the Ministry. Mr. Chang Ying-hau is a man of wide experience in business and has for the past six years been connected with the Ministry of Commerce in the department of commerce and industry. He received his training in the Commercial College in Tokyo, and was for some time President of the Normal College in Paotingfu. He relinquished this position to enter business, and later accepted a post with the Ministry.

The division of information has for the present been divided into eight sections as follow.—(a) Domestic commercial and industrial companies, (b) Foreign commercial and industrial companies, (c) Organization, (d) Exports and Imports, (e) Banking and Accounting, (f) Mining, (g) Transportation and Taxation, and (h) the Secretarial. It is hoped that each section will be built up by means of a competent staff trained to the special work of the respective sections.

The Executive Committee has decided to undertake in the first instance most detailed investigations in the Province of Chihli. It is very hard in China to secure needed information, and a great many experiments will have to be made as to the best methods to be adopted for disseminating the information when obtained. It is believed that all methods proposed to be adopted by the division of information can be tested in Chihli and any changes that are found desirable can be made, so that the Commission will be in a position to know how to handle the other provinces.

This will be by no means the only work of the division of information, as this division will take up questions relating to all industrial matters throughout China. The division of information is now undertaking the compilation of a business directory for the province of Chihli, classifying the different commercial and industrial enterprises and also giving the names of the President and general manager of each, together with the capital. This work is being undertaken by the section of foreign and domestic commercial and industrial companies. Letters have been sent out to all of the Chambers of Commerce as well as Hsiens in Chihli to furnish complete lists of shops in the cities and towns of their respective districts.

The section of transportation and taxation has already undertaken investigations into the means of transportation through the province of Chihli, and is also preparing a schedule of federal and local taxes of all classes of articles.

The section of exports and imports has started its work of classifying foreign imports and looking into the distribution of same throughout the province. The export trade of this province is also being investigated with a view to getting data, as nearly as possible correct, in regard to the marketable products of the province, not only for foreign export trade, but for inter-provincial commerce.

The section of organization has compiled a list of all Chambers of Commerce, guilds, associations for the promotion of commerce and industry, technical schools and all schools having technical courses in the province of Chihli. It is hoped that encouragement can be given to all organizations for the development of native trade by furnishing them with the latest and most up-to-date knowledge relative to modern business enterprise. The Government have realized the deficiency of schools having technical courses, and it will be the business of this section to encourage by every means possible technical education throughout China, but for the present in the province of Chihli.

The section of banking and accounting has not as yet taken up its work, but it is hoped in a very short time that the Commission will be able to have this section actively engaged in an educational campaign. This section was created with a view of disseminating knowledge among the mercantile bodies as well as individuals engaged in trade, that is conducive to a better understanding of the facilities afforded trade by the use of the modern banking system and proper accounting. As pointed out in a previous edition of the REVIEW the matter of proper accounting is of the most vital importance to Chinese trade. For the present a purely educational campaign will be conducted, and forms showing most up-to-date practice in accounting will be sent to each and every business man in the province. It is felt that the Government will be able to impose regulations in regard to accounting as soon as the people are thoroughly conversant with the more modern means of keeping their books.

The work of the division of information is under Mr. Roy S. Anderson, who is supervising commissioner and represents the Executive Committee in its relationship to this division.

In the division of experimentation, work is being done for the present in the way of equipping a suitable laboratory for scientific investigations, and this division is under the direction of Mr. Wu Kwan-sze, who was educated in Belgium, France and Italy. Mr. Wu is a son of Mr. Wu Chung-lien, the former Minister to Italy and at present adviser on foreign relations in the President's Office. Mr. Wu is considered one of the most capable young man in his line in China, and in a future edition of the REVIEW he will outline the work to be undertaken by his division, which is under Mr. Chang Shin-wu as supervision commissioner.

The Government have undertaken to have an Exposition for Home products in Peking on October 10, with a view to adding to the collection of commercial and industrial exhibit at present contained in the museum for this purpose attached to the Commission. Mr. Yung Tao is the President of the Exposition and is also the supervising commissioner of the division of commercial and industrial exhibits, being one of the Executive Committee as well as Chairman of the Commission. Mr. Chen Chai, the chief of the department of commerce and industry in the Ministry, is the Vice-President of this Exposition, while Mr. Tu Thung-peng, the chief of the division of commercial and industrial exhibits, will be the General Manager of the Exposition. Mr. Tu has been in charge for some time of the commercial and industrial museum attached to the Ministry, and is especially fitted for the work as chief of the division. It is hoped that with the start given by the National Home Products Exposition the Commercial and Industrial Museum will be greatly enlarged and will become a more efficient representation of China's industries. While home products will be of the first importance, the Commission intends to make every effort to get foreign firms abroad who so desire to place articles in the Exposition with the hope of stimulating the Chinese to an appreciation of the advance made by foreign countries in commercial and industrial enterprises.

Under the direction of the Executive Committee, there will also be a section of translation and a section of statistics. It is hoped that the services of most efficient men will be secured for these two sections. For the present, in the section of translation, attention will be given to the following languages—English, French, German, Japanese, Italian and

Spanish. The section of statistics will be modelled upon the most modern lines, and specially trained men will be employed in this section.

Most up-to-date methods of office filing and indexing will be used throughout the office, and the Commission has prepared a system for filing for the use of Chinese documents which will undoubtedly prove of the greatest benefit, not only to the work of the Commission, but also to the various departments of the Government. It has been determined that the Commission will work out an office system which will from time to time be improved, in order that the Government may not only benefit by the information received through the work of the Commission, but also from the system used in their office management.

The Commission will undertake to recommend to the Ministry and to the Government all who have rendered special service to the Government and to the people through their efforts to advance the commerce and industry of China. Individuals so recommended will receive from the Government decorations which will be awarded by the Central Authorities with the approval of the President in order to encourage commerce and industry.

The Commission as at present organized consists of a Chairman, two Vice-Chairmen, four Department Heads of the Ministry and the Councillors of the Ministry. From time to time, others from the various provinces will be appointed as members of the Commission.

The regulations for the organization and operation of the Commission as approved by the Government follow.—

REGULATIONS FOR THE COMMERCIAL AND INDUSTRIAL COMMISSION

The Minister of Agriculture, Industry and Commerce (His Excellency Chow Tze-che) submitted the following memorial to the President on June 10, 1915, for the establishment of a Commercial and Industrial Commission:

"Commerce and industry can never be developed without the assistance and encouragement of the Government, which should endeavor to make investigations. Since the Ministry of Agriculture, Industry and Commerce is the chief organ of the Government for the development of commerce and industry, I, Tze-chi, have been most diligent in making investigations. Many plans have been under consideration, but very little has been done in the way of securing results. I have recently planned for the institution of united effort for the development of commerce and industry. It is hereby proposed that a Commercial and Industrial Commission be organized. This Commission shall have three main divisions under its direction and control: (1) Division of Commercial and Industrial Experimentation; (2) Division of Commercial and Industrial Exhibits; (3) Division of Commercial and Industrial Information. With the establishment of such a Commission the work can be greatly expedited.

"Since the establishment of trading relations between our country and foreign countries there has been practically no progress made in the advancement of commerce and industry in China. A close study of the market for Chinese silk and tea for the past ten years will reveal the real cause of our failure. In the preparation of our tea for exportation we have given no attention to either the color or the taste, and both being inferior to foreign teas we have been unable to capture the foreign markets. We have given but little attention to the proper manufacture of silk, and it has been impossible to place our present products in any large quantities on the foreign market.

"In all other lines of marketable goods we have made mistakes. These mistakes are largely because of the ignorance of the merchants who establish enterprises for commercial and industrial purposes without having the requisite technical knowledge to make for success. For this reason it has been impossible to promote commerce and industry. There is sufficient capital in China for investment in paying enterprises, but there are no trained men to handle such capital. There are no large commercial and industrial concerns that stand between the Government and the people, therefore, the foreigners have controlled the trade. The commerce and industry of this country are in an infant stage. Wealth is being lost because no concerted effort is being made to advance domestic commerce and industry.

"It shall be the duty of the Commission to collect from all quarters of the country such information and knowledge that will assist in the promotion of home industry. There shall be established divisions to undertake the collection of information, make experiments and build up a permanent commercial and industrial exhibit. By doing this both the Government and the people will be greatly benefited. We hereby submit a set of regulations containing forty-eight articles for the governing of the work of a Commission, and as soon as the regulations have been approved a Chairman and two Vice-Chairmen shall be appointed at once to organize the Commission."

To the above Memorial the President on the 8th of June replied as follows:

"The proposals contained in the Memorial are hereby approved and the regulations are kept here."

REGULATIONS GOVERNING THE WORK OF THE COMMERCIAL AND INDUSTRIAL COMMISSION.

PART I. General Outline.

ARTICLE 1.—For the development of commerce and industry in China the Ministry of Agriculture, Industry and Commerce propose to organize a Commercial and Industrial Commission.

ARTICLE 2.—The Ministry of Agriculture, Industry and Commerce have submitted a Memorial to the President for the formation of the Commission. The Memorial is appended.

ARTICLE 3.—In order to do the work called for in Article 1, there shall be established three divisions to carry out the work of the Commission: (1) Division of Commercial and Industrial Information; (2) Division of Commercial and Industrial Experimentation; (3) Division of Commercial and Industrial Exhibits. Each Division shall have its own duties to attend to, and these duties shall be outlined in Parts II, III, and IV of this set of Regulations.

ARTICLE 4.—The Commission shall organize a General Affairs Department including a managerial section, a secretariat and accounting sections.

ARTICLE 5.—For the proper handling of reports and correspondence there shall also be organized a Translation Section.

ARTICLE 6.—There shall be organized a Statistical Section for the preparation and care of statistics.

ARTICLE 7.—Each Division shall be under the direction and control of a Division Chief. Each Division shall have assistants as required and these shall be known as Sectional Chiefs. All work connected with copying shall be attended to by copyists who shall be furnished to each Division.

ARTICLE 8.—The Officers of the Commercial and Industrial Commission shall be as follow:

Chairman; Two Vice-Chairmen; Commissioners.

ARTICLE 9.—The Chairman shall have the duty of undertaking all work connected with the business of the Commission in its relationship to the Ministry of Agriculture, Industry and Commerce. The Vice-Chairmen shall have the duty of directing and controlling the work of the various divisions of the Commission.

ARTICLE 10.—The Chairman and Vice-Chairmen shall be appointed by the President upon the recommendation of the Ministry of Agriculture, Industry and Commerce.

ARTICLE 11.—The Commission shall bring up and discuss all questions relating to commerce and industry. The Commission shall be composed as follows:

(A) The Commission shall be appointed by the Ministry of Agriculture, Industry and Commerce.

(B) The Commission shall be composed of men with commercial and industrial experience, and shall be selected in the following manner:

(1) From graduates of technical schools—both at home and abroad.
(2) From men who have made a success in commercial and industrial life.

ARTICLE 12.—The Chiefs of the three Divisions shall also be termed Commissioners.

ARTICLE 13.—The Sectional Chiefs shall also be eligible to a seat in the Commission if invited by the Executive Committee of the Commission. (The Executive Committee shall be composed of the Chairman and Vice-Chairmen.)

ARTICLE 14.—Any matter considered as worthy of discussion in the effort to advance commerce and industry shall be proposed for discussion by members of the Commission either by some member of the Commission or by the merchants.

ARTICLE 15.—If in the opinion of the Commission there is need for the change of any law or for the compilation of any new law for the regulation of commerce and industry the Commission shall have the right to make such changes and prepare such laws, which shall be sent to the Ministry for approval.

ARTICLE 16.—The Commission shall have a conference at least once a month for general discussion of matters relating to the commerce and industry of the country.

ARTICLE 17.—The Commission shall have access to all documents belonging to the various Departments of the Ministry of Agriculture, Industry and Commerce.

ARTICLE 18.—If the Commission desire they may secure information from the various Ministries and from merchants through the Ministry of Agriculture, Industry and Commerce.

PART II. Division of Commercial and Industrial Experimentation

ARTICLE 19.—The Ministry of Agriculture, Industry and Commerce shall appoint a Chief of the Division, who shall have the direction and control of the work in his Division under the supervision of the Chairman.

ARTICLE 20.—The Division of Commercial and Industrial Experimentation shall be composed of four Sections:

(1) Analysis, Experiment and Examination.
(2) General Chemical Experiments and Investigation.
(3) Ceramic experiment and investigation.
(4) To give technical advice.

ARTICLE 21.—Each Section shall have a Sectional Chief and from one to three assistants who shall be experts.

ARTICLE 22.—The merchants or those desirous of having scientific advice from the Sectional Chiefs of the Division shall upon payment of a fee covering expense of investigation be accommodated.

ARTICLE 23.—If any person should need the service of an expert of the Division to look into any matter requiring scientific advice and direction the expert shall be allowed to go, granted the person seeking the service of the expert shall pay all of his expenses.

ARTICLE 24.—It shall be the duty of the Division to train experts, and when necessary to send men to foreign countries to receive special training.

ARTICLE 25.—The Division may establish experimental stations in those places in the various Provinces where such stations may be of value.

PART III. Division of Commercial and Industrial Information

ARTICLE 26.—The Ministry of Agriculture, Industry and Commerce shall appoint a Chief of this Division to control and direct the work of his Division under the supervision of the Chairman.

ARTICLE 27.—The duties of the Division shall be as follow:

(1) Making investigations in regard to the commerce and industry of China and foreign nations.

(2) To disseminate all useful commercial and industrial information.

(3) To assist merchants in making the proper trading connexions.

ARTICLE 28.—The Division shall collect information and make investigations with the assistance, when necessary, of local officials, Chambers of Commerce, and Consuls in foreign countries. When such assistance is found to be inadequate the Commission shall have the right to send persons to carry on such investigations as may be deemed necessary.

ARTICLE 29.—In carrying out the work of Section 2 in Article 27 the Division may resort to means as stated in Articles 17 and 34.

ARTICLE 30.—In carrying out the work of section 4 in Article 27 the Division may use the means as stated in Article 18. Notification should be made to the Ministry of Agriculture, Industry and Commerce.

ARTICLE 31.—The Division of Commercial and Industrial Information shall have two main sub-divisions as follows:

(1) Special Information.

(2) General Information.

ARTICLE 32.—Each Sub-Division shall have from one to five assistants who shall be known as Sectional Chiefs.

ARTICLE 33.—It shall be the duty of the Division to give especial attention to the exports and imports of raw and manufactured material. All work requiring special information shall be allotted to the second sub-division, and all work of securing general information to the first sub-division.

ARTICLE 34.—All inquiries as to technical information shall be answered by the Division if the information needed is possessed by the Division, otherwise the queries shall be referred to the Division of Commercial and Industrial Experimentation for answer.

ARTICLE 35.—The Division shall make immediate reply to all queries from merchants in regard to any subject that does not need special examination.

ARTICLE 36.—In case the Division finds it necessary to make any special investigations in answer to queries from merchants the Division shall send a special man to investigate and the expenses shall be defrayed by the merchants sending in the queries.

ARTICLE 37.—The Commission shall invite merchants possessing special knowledge to act as honorary members of the Division of Commercial and Industrial Information.

PART IV. Division of Commercial and Industrial Exhibits.

ARTICLE 38.—The Ministry of Agriculture, Industry and Commerce shall appoint a Chief of this Division, who shall have the direction and control of the Division under the supervision of the Chairman.

ARTICLE 39.—The Division of Commercial and Industrial Exhibits shall have two main sub-divisions:

(1) To collect material from abroad and at home for the Museum of Commercial and Industrial Exhibits.

(2) To arrange for exhibit all articles received, and to care for their proper protection.

ARTICLE 40.—Each Sub-Division shall have from one to three assistants who shall be known as Sectional Chiefs.

ARTICLE 41.—There shall be a person to care for the Museum.

ARTICLE 42.—At the end of each year a complete catalogue of all articles on exhibition shall be prepared and sent to the Ministry of Agriculture, Industry and Commerce.

ARTICLE 43.—The Commercial and Industrial Museum under the Division of Commercial and Industrial Exhibits shall have a system of exchanges with other museums, and the Division shall establish exhibits in the towns and cities of various Provinces when deemed necessary.

ARTICLE 44.—Any visitor to the Museum shall be shown about by a "museum guide."

ARTICLE 45.—A National Exhibition of Commercial and Industrial products shall be held once a year.

ARTICLE 46.—Awards shall be made to those exhibitors who show Products of especial merit.

PART V. Miscellaneous.

ARTICLE 47.—The Commission together with its various Division Chiefs shall make up the programme of work.

ARTICLE 48.—The Regulations shall be enforced upon official promulgation.

THE FAR EASTERN CHAMPIONSHIP GAMES AND THEIR NATIONAL SIGNIFICANCE

BY ARTHUR SHOEMAKER PHYSICAL DIRECTOR TSING HUA COLLEGE

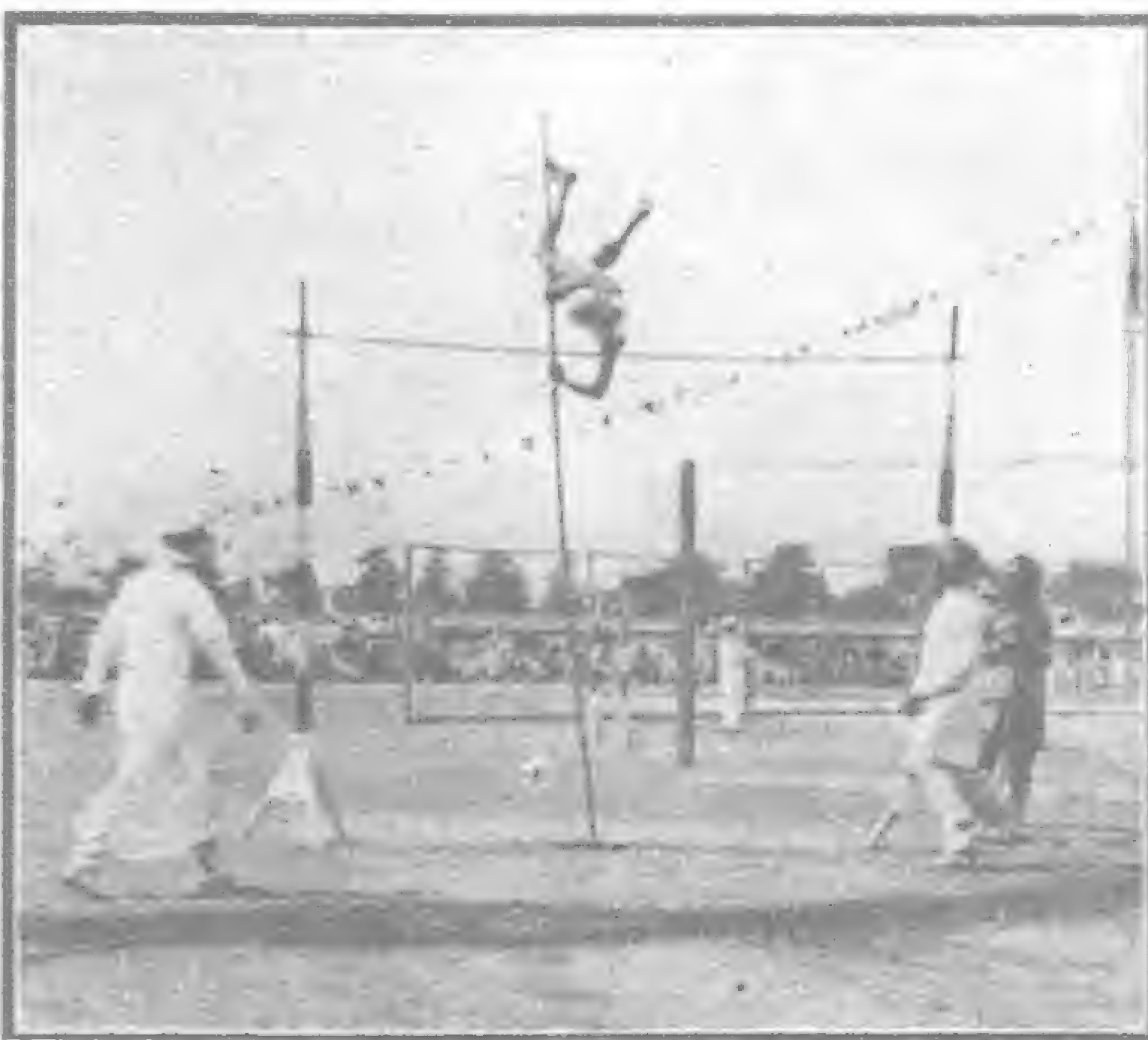
Only a decade has passed since China was convalescing from an acute attack of anti-foreign indigestion. Her elaborate system of body gymnastics and fighting charm as developed by the Boxer organization, had met with utter failure when matched against the more modern methods of warfare.

The subjects of modern physical training and track athletics and games were practically unknown in China, besides all physical sport and exercise was officially tabooed as an occupation invented for coolies only. Little did China dream at this time of ever countenancing her sons developing their bodies or engaging in such menial pastimes as physical sports. Still further removed was the idea of China as a nation competing in friendly International athletic competition. But the miracle has been performed, and this year China has taken the leadership among the countries of the Far East in feats of athletic skill and prowess.

Under the new Governmental régime, China is emerging from behind the veil of conservatism and superstition and has already matriculated in the school of modern science, education and industry. This is a most encouraging sign of progress, and moreover, it is a courageous step, when we think of her vast ages of schooling under a selfish despotic Governmental rule.

The first competition in athletic sport and games of National importance, along modern lines, took place at Nanking in the Fall of 1909, in conjunction with the National Industrial Exposition. Invitations were mailed by the

committee in charge of the games, to all the Government and mission schools in China, asking them to send representative teams to take part in the First National Track and Field Sports and Games. About 150 athletes were finally assembled and a successful meet was



Chinese Winning Pole Vault

concluded. The Shanghai Sectional team carried off first honors with the North China Sectional team not far behind. The games amused and created much interest among the thousands of Chinese who saw them, and the

newspapers gave them prominent space and favorable comment. It was the general feeling then that this was a real beginning along this line.

At the instigation of the Peking Athletic Association, the Second National Championship Games were held at Peking in the spring of 1914, inside the Temple of Heaven enclosure. In this beautiful old historic place, where the Emperors (Sons of Heaven), from the time of the Ta Mings, came annually on the First Moon of the Fall Season, to offer up to the God of Heaven in a formal burnt offering, the great book of all the recorded deeds of the past year, here 250 brawny celestial athletes had assembled to vie with each other in feats of modern Track Athletics and Games. Indeed it was an impressive picture with the great round dome of the Altar of Heaven rising above the long avenues of virgin evergreen trees that formed the background of this the modern athletic stage. Placing the two motives side by side, the old and the new, one the beginning of a new record sheet under the old régime, the other representing the awakening of a new manhood in China under a new régime; here was a picture full of significance as well as a picturesque one.

I don't believe any one had ever thought about this interval between the first and second National Games as being an Olympiad. Why not carry this Olympiad idea out in celebrating the National Games of China and set the next date for 1917?

These second National games gave evidence that the Northern students had made the



Football Eleven of Tsing Hua College



Basket Ball Squad and Physical Director

longest strides forward, as shown by the easy manner in which they carried away the first honors, while the Shanghai and Yangtse valley team trailed along in second place.

For several months past there had been evolving in the minds of some of the leaders in the Philippine Islands, the idea of establishing a Far Eastern Olympic Games after the order of the modern world Olympics and ancient Olympic games first instituted in Greece in 776 B.C.

With this idea in view invitations were sent out to all the countries of the Far East, resulting in favorable replies from three of them, China, Japan and the Philippine Islands. This show of interest seemed to the Committee to be sufficient for a beginning at least, and so the Committee on sports and games in conjunction with the annual Philippine carnival issued invitation to all the Far Eastern countries, to send representatives to participate in the First Far Eastern Olympic Games to be held at Manila, February 1st to 10th, 1913.

After several months of preparation and training these three countries assembled together at Manila on scheduled time, more than 150 formidable contestants. The Governor General of the Islands formally opened the games with remarks of welcome addressed to the visiting teams and representatives. Many of the official dignitaries and influential men of Manila were present besides thousands of native Filipinos and Chinese who had come to see and cheer their countrymen to victory. The final score sheet showed that the Philippine Islands team had won first honors with a good margin to spare, with China second and Japan third. It might be well to state here that the Chinese athletes would have given a much better account of themselves had they not suffered from a rough sea voyage en route with its consequent weakening influence, arriving at Manila only the day before the games took place. A meeting of the representatives

from China, Japan and Philippine Islands was held at the conclusion of the game when it was decided that the Second Far Eastern Olympic Games should be held at Shanghai, China, in 1915.

A Games Committee was appointed with headquarters at Shanghai, and the Second Far Eastern Championship Games have just come to a successful close, May 15th to 22nd. This time China evened up the score of her old rival, and won first honors, with the strong Philippine Islands team a close second. Japan, although making a much better score than in the First Olympics, still had to be content with third place. The time and place for the Third Far Eastern Championships has not been decided upon, although it is expected that they will take place in Japan in 1917.

This brings us to a consideration of the real significance of these games. We know from experience, that to prepare for them and to carry them on successfully, it requires a large expenditure of effort, time and money. The question arises then, are competitive sports and games carried out on such a large scale really worth while? In answering this question let us consider it from an educational and social view-point.

Most of us have studied at school the subjects of geography and history, and are supposed to have stored away in some small niche of our cranium more or less facts about the different countries of the world and something about the people who inhabit them. The sum of all this sort of knowledge is what we call education. Be assured that every member of our party who went to Manila had some vague notion about a native Filipino, for did we not remember pictures of him in the geography book? He was a man of ordinary stature with a decided chocolate complexion all over; he carried a shield and a long spear, and wore around his loins a girdle of cocoanut or palm leaves woven into a belt. Since the

occupation of the Islands by the United States, efforts were being made of course to domesticate and educate the native, but then we did not look for any great change in this brief space of years.

On the arrival at Manila, much to the delight of all, we did not find any such primitive state of civilization, although we were told afterwards by a reliable resident, that very primitive races did exist on some of the more remote islands where the natives dressed and looked just like the picture in the geography book. At Manila, however, we were met at the steamship by a committee of refined, educated men, representing various social, political and educational organizations. These gentlemen extended to our party a cordial welcome and the hospitality of the Island. A Committee of Chinese, representing the Chinese Merchants Association of Manila was also there to greet their own countrymen. We soon learned that there was a large Chinese population in Manila, also Chinese residents scattered throughout the Islands. We were further informed that the Chinese controlled a very large share of the business in Manila and that they were respected by both the natives and foreigners as being good, reliable business people.

The visiting Chinese athletes were the guests of the Chinese Merchants Association during their stay in Manila, and everything was done to make them feel welcome and comfortable. Many of the Chinese residents paid daily visits to the hotel to talk with them, they would ask all manner of questions about their home-land which the great majority of the Island residents had never seen. They were also conspicuous by their numbers in attendance at the games, where they came to see and encourage their native team. They invited us to banquets and chartered special tram cars to show us around the city. This social intercourse and exchange of views, this ocular and oral information at first hand, was worth more in terms of educa-



China's Contingent of Athletes Who Took Part in Shanghai Championship Games

tion than years of study from a book on the subject of the Philippine Islands.

This same educational opportunity was given to the 100 or more competitors who came from the Philippine Islands to compete in the Second Far Eastern Championship Games held at Shanghai in May. Certainly they carried away with them a more vivid and truthful impression of China than a lifetime of book knowledge would have given them. Just this sort of experience takes place with every set of athletic games, whether it be National or International.

The education derived from participation in the sports and games themselves is of another type, and of even greater importance, because it is principally intrinsic in effect and deals with the moral and physical side of man's nature. Before the athlete participates in championship games he must first pass through weeks of preparation and training. This schooling gives to his body what intellectual training gives to the mind, namely, strength and symmetry of growth, accurate judgment,

physical power, endurance and aggressiveness or confidence, physical discipline and watchfulness or self-control. Add these qualities of a sound educated body to a keen intellectual mind and you have a *real man*.

This is the aim of the modern physical training, to raise man up to a higher grade of efficiency by giving special and expert attention to his neglected side—a weak and untrained body. It is not surprising then that all of the leading educational institutions in the United States of America have added courses in physical education to their curriculums. It is because they believe that here is a large field of practical education and usefulness that has been overlooked and undeveloped; while some systematic out-of-door exercise was not invented for the coolie or the growing youth only, but it should become a universal *life habit*, a real part of our daily program.

Have you ever thought of some of the mental and bodily benefits that can be derived from daily participation for one hour in tennis,

horseback riding, golf, baseball, football, archery, or class exercises in a good gymnasium? Let me enumerate a few of them. It will annihilate weariness and give a fresh and energetic tone to the body. It aids digestion and gives one a better appetite. It stimulates peristaltic action of the intestines and assists the body in ridding itself of waste materials. It strengthens the nervous system; gives physical strength, endurance and agility. It enables one to do better mental work in a shorter time. Last and foremost, it is the best remedy known for keeping the body in good health. Plato, the philosopher, said: "To train the mind and neglect the body is to produce a cripple."

The real significance of all our competitive athletics and games is summed up in terms of bodily health, education and efficiency. If they do no more than form the habit of out-of-door exercise among the youth of our country they will have been well worth while, and will have accomplished their purpose. The most vital and important asset to a country is a strong and vigorous physical manhood.

PHILIPPINE FOREIGN TRADE IN 1914

The Philippine commercial outlook at the beginning of 1914 was for a much increased volume of imports and exports. The unprecedented import total of 1912, including as it did large famine-purchases of rice, was really a measure of misfortune, but following a stationary condition in the general import movement in the earlier part of 1913, there was already an increasing volume in the latter part of the year; while the reduced output of the great staples following the disasters of 1912, which had seriously affected the export total of 1913, was confidently expected to give place again to normal production in the course of 1914. These anticipations were fully realized during the earlier part of the year, with an increase of approximately two million dollars in imports and six and a half million in the export total over the corresponding period of 1913. But with the coming of war Philippine trade suffered with the rest of the world. The favorable conditions of the earlier part of the year were reversed, and the net result for 1914, according to customs returns received by the Bureau of Insular Affairs, was a decrease of \$4,724,133 in imports and an increase of only \$916,678 in exports.

While the reduced import total for the year was generally distributed it fell chiefly on cotton cloths and the iron and steel trade. The exceptionally large importations of cotton textiles in 1913, amounting to over eight million dollars, were not maintained even in the earlier months of 1914, and a more rapid decline during the war period resulted in a shrinkage of \$1,872,398 for the year. The United States continued to contribute about three-quarters of the whole, and in this connection it is of interest to note that in the reduced exports of cotton cloths from the United States in 1914 the Philippine market assumed a relative importance never before reached and far exceeds the purchases of any other country.

Imports of iron and steel during the first seven months exceeded by over a million dollars those of the corresponding period of 1913, but this was reversed later, and there was a reduction of \$1,630,460 for the year. Though the trade suffered generally from war conditions, sugar machinery, which reached over a million dollars in value in 1913, was the leading item in this decline and accounts for more than half. During the latter part of 1913 these imports were unusually heavy in connection with the installation of new mills, but the prospect of free sugar in the United States and the reduced sugar production of that year were not conducive to new contracts and further development of the industry. The

Foreign Commerce of the Philippine Islands—Imports

Compiled by the Bureau of Insular Affairs. War Department

		Twelve months ending December			
		1913		1914	
		Quantity	Value	Quantity	Value
Automobiles	No.	696	\$954,454	589	\$703,866
United States	"	605	767,021	499	519,820
Other countries	"	91	187,433	90	184,037
Cement	Bbls.	447,974	811,692	336,863	554,882
United States	"	8	36	43	119
Germany	"	211,707	416,844	83,877	157,451
Hongkong	"	123,265	199,790	83,102	126,739
Other countries	"	112,004	195,022	169,841	270,573
Coal	Long tons	552,552	1,584,067	587,696	1,749,745
United States	"	55,043	166,944	41,407	120,255
Australasia	"	45,612	120,664	83,865	208,365
Japan	"	356,688	1,084,886	305,296	1,040,117
Other countries	"	95,209	211,573	157,128	381,008
Cotton, and manufactures:					
Cloths	Sq. yds.	101,040,051	8,175,363	76,773,383	6,302,965
United States	"	74,321,820	5,970,545	58,348,880	4,667,983
United Kingdom	"	17,746,245	1,476,918	11,480,422	1,037,618
Other countries	"	8,971,989	727,900	6,944,081	597,364
Thread	"	—	453,584	—	453,044
United States	"	—	407,200	—	404,074
Other countries	"	—	46,294	—	49,570
Wearing apparel	"	—	1,424,325	—	1,422,132
United States	"	—	363,252	—	379,448
Germany	"	—	229,815	—	215,079
Japan	"	—	466,916	—	565,678
Spain	"	—	264,086	—	184,258
Other countries	"	—	100,256	—	77,669
Yarn	Lbs.	3,561,977	807,059	4,036,852	910,515
United States	"	6,402	1,220	181	39
United Kingdom	"	1,142,153	292,046	987,304	250,501
Japan	"	1,476,870	391,382	2,293,324	490,410
Other countries	"	936,552	212,411	756,043	160,565
All other	"	—	893,970	—	874,868
United States	"	—	342,410	—	382,669
United Kingdom	"	—	234,539	—	200,410
Other countries	"	—	317,021	—	291,789
Iron and steel:					
Machinery	"	—	3,371,222	—	2,538,445
United States	"	—	1,974,928	—	1,655,034
United Kingdom	"	—	604,942	—	398,855
Other countries	"	—	791,352	—	484,556
Corrugated roofing	Lbs.	22,213,453	740,290	23,192,906	770,311
United States	"	17,706,792	614,347	20,212,763	687,676
Other countries	"	4,506,661	125,943	2,980,143	82,635
All other	"	—	4,502,392	—	3,674,688
United States	"	—	3,440,508	—	2,750,586
United Kingdom	"	—	410,575	—	307,005
Other countries	"	—	651,309	—	617,079
Illuminating oil	Galls.	14,417,572	\$1,268,044	12,817,063	\$1,281,020
United States	"	13,322,539	1,188,952	10,607,013	1,081,734
Other countries	"	1,095,033	79,092	2,210,050	199,286

result was that imports in 1914 amounted to only \$170,030, the smallest sum since 1910, when the modernization of the Philippine sugar mill began.

The coal trade increased, but was less exclusively from Japan. Australian shipments were larger than in 1913, though they have ceased to occupy the prominent place of former years. Imports of cement were less, with a cessation during the latter part of the year of German shipments, which constituted the bulk of the heavy trade of 1913. Imports from Japan and China, however, continued to increase at the expense of the Hongkong product, which for many years dominated the market. The first cement factory to be installed in the islands was in course of construction during the year, but there has been delay in completion in consequence of the war,—its equipment having been contracted for in Germany.

Imports of rice to meet famine conditions in 1912 reached the highest value ever recorded in the trade, and amounted to twenty per cent of all imports, but under increased local production dropped in 1913 to the lowest figure during American occupation, and there was only a slight increase above this minimum in 1914. With the outbreak of war, embargo on shipments from French Indo-China, the chief Philippine source of supply, threatened a serious situation, but the government took prompt measures to check advancing prices by emergency purchases and to secure a continuation of normal trade relations with the French colony. The crisis was passed without serious local disturbance or perceptible interruption of import movement, receipts of Saigon rice being constant during the war period and constituting ninety per cent of the total for the year, with reduced shipments from Siam and only a nominal trade in Burma rice, the smallest in many years. Imports of wheat flour continued to decline and the American product was less by seventy-five thousand barrels. Imports from Australia were better maintained but practically disappeared in the months of November and December.

Some Food Stuffs Decline

Among minor foodstuffs there was a heavy drop from the abnormal half million dollar American salmon trade of 1913, and an important increase in a sardine trade almost as exclusively Spanish. Imports of fresh beef were less but this must be considered in connection with an increase in cattle for slaughter. Australian cattle were imported in larger numbers and shipments from French Indo-China were also resumed in November and December after many months of practical exclusion,—government restrictions having been relaxed in anticipation of a possible embargo upon Australian trade. Purchases of refined sugar continued to decline coincident with increasing local production of superior grades of sugar, and for the first time were chiefly from the United States, though American sugar has enjoyed a tariff preferential since the free trade legislation of 1909.

Exports of Manila hemp realized expectations of recovery in the plantations from the typhoons and unprecedented drought of 1912, which resulted in such heavy loss to production in 1913, and during the first seven months of 1914 an increase of seventeen thousand long tons justified the forecast of normal shipments in the closing months. The war period, however, reversed all this. A monthly average of over eleven thousand tons in the earlier months dropped below seven thousand, and the total for the year was slightly less than the greatly reduced trade of 1913. The full measure of shrinkage in production in conjunction with war is shown in the export decline from 172,311 long tons in 1912 to 114,547 in 1914. While this drop was compensated to a large extent in 1913 by increase in price, the further decline in quantity in 1914 was accompanied by lower prices, with a further reduction of about two million dollars in value.

Leather, and manufactures:

Boots and shoes Pairs	469,193	630,147	675,331	912,770
United States "	327,923	598,406	500,303	878,118
Other countries... .. "	141,270	31,741	175,028	34,652
All other "	—	423,301	—	645,054
United States "	—	344,249	—	554,607
Other countries... .. "	—	79,052	—	90,447

Meat and dairy products:

Beef, fresh... .. Lbs.	14,558,850	946,046	12,675,246	882,144
United States "	—	—	—	—
Australasia "	14,558,850	946,046	12,675,246	882,144
Other countries... .. "	—	—	—	—
Condensed milk... .. Lbs.	11,151,184	794,195	9,803,043	724,062
United States "	2,156,705	141,358	1,456,377	114,712
United Kingdom "	5,230,056	396,063	6,148,925	466,652
Other countries... .. "	3,764,423	256,774	2,197,741	142,698
All other "	—	1,524,274	—	1,378,341
United States "	—	629,333	—	505,922
Australasia... .. "	—	404,038	—	304,071
Other countries... .. "	—	490,903	—	568,348

Paper, and manufactures

United States "	—	819,437	—	757,190
France "	—	469,480	—	473,405
Germany "	—	110,787	—	67,975
Other countries... .. "	—	61,444	—	39,734
Rice Long tons	85,625	1,164,591	95,390	3,276,148

United States "	—	1	—	—
French E. I. "	73,983	2,615,786	87,507	2,949,414
Other countries... .. "	11,642	548,804	7,883	326,734

Salmon, canned... .. Lbs.	11,471,887	528,668	6,669,845	314,292
United States "	11,471,760	528,654	6,667,843	314,152
Other countries... .. "	127	14	2,002	140

Wheat flour Bbls.	488,063	1,898,954	399,449	1,611,158
United States "	340,402	1,308,341	265,298	1,050,273
Australasia... .. "	142,592	590,217	134,076	560,469
Other countries... .. "	69	396	75	416

Wood, and manufactures	—	770,627	—	771,789
United States "	—	503,837	—	624,582
Other countries... .. "	—	266,790	—	147,207
All other articles "	—	16,736,084	—	16,078,624

Total imports 53,312,786 48,588,653

Twelve months ending December

Exports	Quantity	1913		1914	
		Value	Quantity	Value	
Copra Long tons	80,920	\$9,545,724	85,965	\$7,980,270	
United States "	9,879	1,199,083	17,894	1,606,133	
France "	43,638	5,064,431	38,755	3,485,748	
Germany "	10,583	1,403,319	6,363	767,595	
Other countries "	16,820	1,878,891	22,953	2,120,794	
Coconut oil Lbs.	11,595,719	1,146,339	26,330,263	2,619,183	
United States "	11,071,466	1,095,438	26,228,071	2,607,163	
Other countries "	524,313	50,901	102,192	12,020	
Hats... .. No.	547,218	408,939	681,275	313,881	
United States "	266,281	252,220	602,527	253,852	
Other countries "	280,937	156,710	78,748	60,029	
Hemp (Manila)... .. Long tons	117,928	21,121,084	114,547	19,194,815	
United States "	46,400	9,787,216	49,348	9,619,376	
United Kingdom "	57,083	8,108,005	48,232	6,040,714	
Japan "	4,670	1,707,292	5,859	2,075,512	
Other countries "	9,775	1,518,571	11,108	1,459,213	
Hemp, knotted Lbs.	739,035	565,560	701,105	570,787	
United States "	10,697	9,444	963	950	
France "	92,203	71,437	60,777	55,455	
Italy "	527,071	405,085	553,351	445,992	
Switzerland... .. "	63,184	47,240	10,608	8,375	
Other countries "	45,880	32,354	75,406	60,015	
Magney Long tons	6,960	590,951	5,440	417,057	
United States "	421	44,676	522	49,313	
United Kingdom "	4,920	409,229	2,923	219,015	
Other countries... .. "	1,619	137,046	1,995	148,729	
Sugar Long tons	154,848	7,032,880	232,761	11,059,593	
United States "	30,232	1,564,036	166,851	8,241,853	
China "	20,883	1,338,276	18,434	805,598	
Hongkong "	48,851	2,112,854	28,511	1,108,602	
Japan "	45,868	2,016,904	13,604	619,705	
Other countries "	14	819	5,361	283,835	
Cigars Thous.	191,762	3,012,234	154,754	2,315,159	
United States "	71,513	1,642,888	56,205	1,200,126	
Australasia "	16,583	243,763	13,690	201,312	
British E. I. "	22,892	252,117	15,362	181,343	
China "	22,081	209,380	17,199	174,570	
Hongkong "	14,398	163,374	9,549	121,496	
Other countries "	44,295	500,712	42,749	436,312	
Leaf tobacco Lbs.	28,088,987	1,854,776	28,848,165	1,757,824	
United States "	9,888	2,259	45,598	4,612	
Austria-Hungary "	1,796,085	163,080	392,406	41,150	
Spain "	18,778,875	1,229,263	18,028,004	1,146,348	
Other countries... .. "	7,504,139	460,174	10,382,157	565,714	
All other articles "	—	2,494,460	—	2,461,065	
Total exports	—	47,772,956	—	48,689,634	

Sugar Shows Increase

The sugar industry after two years of unfavorable crop conditions showed results of increasing acreage and improved methods by exports in 1914 of 232,761 long tons. This is considerably above the highest figure reached during American occupation, and is nearing the two hundred and fifty-seven thousand ton maximum of the industry in the frequently quoted period of prosperity during the Spanish regime, before the competition of beet sugar and the improving methods of production elsewhere left Philippine sugar discredited and the industry decadent. There was but slight improvement over the low average price of sugar in 1913, high war prices having but little effect as the bulk of the crop was marketed before that time. The larger quantity, however, netted a four million dollar increase with which to offset the general decline in the value of other exports, and to put the industry in a more favorable position for further modern mill equipment. There are now in operation some fifteen recently installed mills capable of producing high grade sugar, and the long delayed start has been made to raise the low standard of Philippine sugar to that of other countries and add to production the present waste through obsolete methods. Upon equal terms with other sugar the American refiner does not look with favor upon the Philippine product, but under the advantage of free trade the bulk of it was diverted to the United States prior to 1913. In that year a large Cuban crop at hand for American needs combined with an unusual demand from Japan and favorable Oriental conditions, shifted the market to nearby countries. Early in 1914, however, Japanese purchases ceased, shipments to the United States resumed their former importance, and were over sixty per cent of the total exports for the year.

Copra versus Coconut Oil

Unfavorable conditions in the copra industry grew worse rather than better during 1914. A new element entered into the slow recovery of the coconut plantations from the disasters of 1912, and production was confronted by the discouraging feature of a serious downward movement in prices from the extremely high figure reached in 1913. Export prices had already declined in July to a marked extent, and the war brought a further drop, with figures for the closing months ranging below 3.5 cents per pound against more than 5.5 cents in the corresponding period of 1913. Exports reached a very low level in the earlier part of 1914 and though there was a larger movement in the closing months, only a nominal increase was recorded for the year. The full extent of the depression in the industry through small production and declining prices as compared with the high tide of former prosperity is shown by exports of 149,536 long tons in 1912 valued at over fourteen million dollars, against 85,965 valued at a scant eight million in 1914. The reduced quantity of copra exported in the past two years must, however, be considered in connection with a new trade in coconut oil developed since 1912, and roughly representing the consumption of some twenty thousand tons of copra in the manufacture of these exports in 1914. This oil trade is the product of a plant recently installed at Manila, and the new industry outstripped all minor export industries, with a total of over two and a half million dollars in 1914. With this result from one plant and another in prospect of larger capacity, the outlook for further increase in exports of coconut oil is favorable, and the local manufacture of a leading raw material heretofore exported is an important development to be watched with interest.

The leading feature in the reduced cigar trade of 1914 was the continued lack of interest shown by the American buyer. The American

Commerce of the Philippine Islands by Countries

	Imports		Exports	
	Twelve months ending December			
	1913	1914	1913	1914
United States	\$26,676,261	\$24,020,395	\$16,434,018	\$24,427,710
Hawaii	594,847	242,250	127,275	119,415
United Kingdom	5,376,039	4,429,612	9,068,607	7,280,033
Australasia	2,678,090	2,425,251	616,911	602,650
Austria-Hungary	161,267	149,045	190,344	82,829
Belgium	287,035	215,560	544,146	353,525
China... ..	2,312,265	2,669,628	1,646,841	1,105,718
East Indies, British	665,238	744,346	1,327,128	1,157,005
French	2,707,637	3,131,240	12,284	8,505
France	1,448,164	1,098,609	5,482,852	3,897,283
Germany	2,888,441	2,252,550	1,741,508	1,079,714
Hongkong	529,458	297,148	3,178,918	2,025,017
Italy	229,595	191,678	406,360	738,520
Japan... ..	3,393,230	3,633,612	3,924,534	2,993,845
Netherlands	183,384	132,504	287,021	333,116
Spain... ..	1,238,922	1,193,475	2,452,507	2,250,337
Switzerland	701,782	520,895	49,115	11,007
Other countries	1,241,131	1,240,825	192,407	316,325
Total	53,312,786	48,588,653	47,772,956	48,689,634

TOTALS.

January	\$4,743,786	\$5,517,600	\$4,368,605	\$3,458,749
February	4,059,625	3,942,920	3,820,429	4,063,889
March	3,960,078	5,392,266	4,875,609	4,561,685
April	3,405,030	3,944,284	3,606,886	3,582,188
May	4,319,970	4,040,007	3,051,258	4,957,466
June	4,784,449	5,135,545	3,902,204	6,466,196
July	4,526,641	3,772,427	2,596,125	5,542,077
August	3,547,287	3,976,620	5,090,988	3,153,175
September... ..	5,599,148	3,752,635	5,529,434	4,035,167
October	5,128,377	3,257,901	4,246,001	3,512,140
November	4,750,134	2,507,471	4,178,851	2,158,367
December	4,577,361	3,348,077	2,506,476	3,198,535
Total	53,312,786	48,588,653	47,772,956	48,689,634

UNITED STATES.

January	\$2,283,772	\$3,071,750	\$1,503,854	\$1,148,756
February	1,982,135	1,747,515	1,902,044	1,570,065
March	2,105,663	2,725,024	1,183,651	2,284,306
April	1,374,308	1,885,466	920,960	1,883,091
May	2,287,705	1,996,280	1,235,891	2,680,092
June	2,256,390	2,819,588	854,909	3,647,195
July	2,475,858	1,626,885	835,038	3,270,783
August	1,352,797	1,882,575	2,086,718	1,706,332
September	2,036,306	2,035,238	2,576,691	2,360,011
October	2,631,139	1,492,614	1,624,569	1,949,867
November	2,533,016	1,179,725	1,010,438	946,776
December... ..	2,397,082	1,537,735	608,346	979,536
Total	26,676,261	24,020,395	16,434,018	24,427,710

demand, which dates from free trade, has been very irregular and the large shipments immediately following the passage of the legislation was succeeded by a period of depression from which there was not complete recovery until 1912, when the quantity exported reached ninety million and nearly equaled that to all other countries. Another reaction became evident toward the middle of 1913, which continued down almost to the end of 1914, with the monthly export average only slightly above four million. There was some improvement in the closing months, but the total for the year was smaller and amounted to 56,205,000 against 71,513,000 in 1913. Average prices in the American trade, which have ranged relatively high—partly in consequence of restriction placed upon the export of lower grades to the United States—declined following the removal of this limitation, but under the free conditions of 1914 still remained considerably above the general level. The unusually large trade with countries other than

the United States in 1913 was not maintained, and the less favorable condition of the cigar industry in 1914 is shown by a seven hundred thousand dollar shrinkage in the export trade. The quantity of leaf tobacco marketed was somewhat larger than in 1913, but there was a decline in value in consequence of an average export price the lowest in many years.

In the distribution of Philippine trade by countries in 1914 the United States was credited with half the total value of both imports and exports, the considerable increase in the proportion of exports being chiefly due to the resumption of sugar shipments to the American market. In addition there was a trade of some importance with Hawaii largely made up of imports of coffee and exports of cigars, and a small but growing general export trade with Guam following improved shipping facilities. Exports to all leading countries other than the United States were uniformly smaller, and this was also true of imports with the exception of nearby Oriental sources.



General View of whole Intake Installation—Settling Tanks in Foreground.

THE SWATOW WATERWORKS

With the growth of trade, Swatow—situated as it is at the junction of the Kit-yang River and the southernmost arm of the Han River, with good water communication with the interior and connexion with the important business centre of Chowchow-fu by railway—gradually developed into one of the most important seaports of China. With its growth the need rapidly arose for a more modern and convenient water supply than that furnished by the old-style bucket system, and early in the nineties many of the more progressive people in the city began to discuss the advisability of having a modern supply installed. This movement took definite shape ultimately.

In 1892, 1899 and 1905 Messrs. Leigh and Orange, Civil Engineers of Hongkong, were consulted and reported on various schemes for a water supply, and in 1909 the scheme as now carried out was evolved and sanctioned. Thanks to the efforts of Mr. Ko Shing-Chi, a prominent merchant, and his friends who had faith in his scheme, Swatow now has water throughout, the analysis of which compares very favourably with any other water supply.

It was decided to take the water from the Han River at Ambow. A suitable piece of ground was purchased on the river bank and staff quarters erected at once and the work proceeded with.

The water from the river passes into a steel intake tower placed well out into the stream, and from it through a 15 inch diameter pipe to the intake well from which the low-lift pumps discharge it into four settling tanks. The water then gravitates into the filter beds. It then passes into the service reservoir, connected to which is a service tank. The clean water is pumped from the service tank by the high lift pumps through the 6½ miles of 12 inch pipe to a steel water tower at Swatow. From the water tower distributing mains are laid throughout the town to hydrants from which, in the original scheme, it was decided to supply the town by buckets as before. Since the completion of the works, however, individual homes have been connected to the mains and now practically the whole town is so supplied.

The water required for the fire hydrants is far in excess of the quantity needed for domestic purposes in each district served by them, namely, 20 gallons per head of population. In the event of a large fire, the supply of water can be cut off and unfiltered water pumped into the mains.

The level of the highest known flood was taken before designing the work and allowance was made to keep the cope of the reservoir 2 feet 6 inches above this; nevertheless on September 8, 1911, when the bulk of the walls of the settling tanks and

filters were finished, and before the filling was completed, a flood occurred which rose 1 foot 6 inches above the highest known level, burst the service tank below the intake works, and completely submerged them. The work stood this severe test well, and no damage resulted beyond the loss of some false work and shuttering and the washing out of part of the filling.

The settling tanks, filters, and reservoir were partly excavated below the original ground and carried up to 12 feet above it. The banks were built up with sand taken from the river and the clay puddle from the actual site on which the tanks were built.

No stone was obtainable on the site, and all concrete aggregate was broken granite obtained from Kak Chiao and brought up the river in boats. The sand was dredged from the river bed and bricks had to be brought from Canton and Amoy. Green Island cement was used throughout.

Intake Tower.—The intake tower is a one-half inch steel cylinder three feet in diameter, with a base plate and angles. The cylinder is perforated for a length of five feet at the lowest range of the river water, and is supported by 12 inch by 6 inch rolled steel joists driven as piles three feet clear of the base plate and pulled over at the top and bolted to the cylinder.

The river was excavated and the tower bedded on sand, the piles being driven afterwards.

Steel piles were used and connected up by a double ring of 10 inch by 4 inch channels to act as a fender to keep off river craft. Access from the shore is provided by a lattice girder foot bridge and a ladder is also provided inside the cylinder for cleaning purposes.

A 15 inch valve is provided immediately on the shore side of the intake tower on the 15-inch supply pipe for shutting off all water from the intake well, where any footvalve trouble can be dealt with.

The intake well is 18 inch brickwork in cement and was sunk on a teak kerb, until the required depth of 12 feet below the surface was reached.

The bottom was then sealed with 2 feet 6 inches of cement concrete and the walls completed up to the finished level 11 feet above the surface, and the filling put in outside.

The lowlift suctions each 14 inches in diameter, with their footvalves, are in this well.

Engine House.—The engines and boilers are housed in a building of Canton red brick in cement mortar, faced with Amoy red brick. The interior is lined with white glazed tiles. Steam is provided by two Babcock-Wilcox boilers with a working



The Han River Siphon—Built in two sections to permit River Traffic



The settling tanks in course of construction showing the concrete buttresses

pressure of 180 lbs. per square inch, having a heating surface of 1,098 square feet and a grate area of 27 square feet, with two superheaters, a Green economizer of thirty-two tubes, and an exhaust feed-water heater of 55 square feet heating surface. Provision is made for the addition of another boiler.

Pump.—The pumps are duplicate, of the horizontal Worthington type, triple-expansion, surface-condensing high-and lowlift pumping engines. All water pumped passes through the surface-condensers on the delivery side of the pump, thus avoiding the use of a circulating pump. The delivery of the low-lift pumps is 1,375 gallons per minute, 10 per cent more than that of the high lift, which throw 1,250 gallons per minute, to allow for waste and evaporation in passing through the filters. Each set is capable of raising 1,200,000 gallons in 16 hours or 1,800,000 gallons in 24 hours, and delivering through the 12 inch pipe-line, $6\frac{3}{4}$ miles in length, to the water-tower 70 feet above the pump delivery and 86 feet above ground-level at the water-tower.

The engines are carried on reinforced-concrete beds on reinforced-concrete foundations. These foundations were loaded with 25 per cent. more than the weight of the engines and beds and sunk until they took a bearing. The chimney is carried on a raft of cement concrete 25 feet square reinforced with old 75-lb. flat-bottomed rails.

Settling-Tanks. The settling tanks are four in number, 200 feet by 113 feet by 9 feet deep, with 7 feet 6 inches depth of water, containing 1,200,000 gallons each. They are worked in series of three; the first being filled by the low-lift pumps, the water flows over weirs to the second and third, the fourth being left empty for cleaning. From the third tank the water gravitates to the filters.

These tanks are constructed with cement-concrete bottoms, 15 inches thick, laid to a fall of 1 in 54 towards a centre channel, which drains to a sump with an 8-inch scour pipe conveying the deposited matter to the river below the works. Expansion-joints filled with marine glue are provided 10 feet apart. The sides are of 6-inch cement-concrete reinforced with No. 8 expanded steel laid to a slope of $1\frac{1}{2}$ in 1 and supported on concrete buttresses 10 feet between centres and 6 inches thick, an expansion-joint being put in at each buttress. The whole tank is surrounded by 18 inches of clay puddle.

The water-level is fixed by an 8 inch overflow-pipe connected with the scour-pipe, and the water is drawn off to the filters at a point 3 feet 6 inches above bottom. The overflow-pipe is fixed at the lowest point of the scour-channel and has a cone joint: on lifting this the whole tank can be emptied into the scour-pipe.

Before commencing construction, trial holes were dug on the site of each settling-tank, and 3 feet to 3 feet 6 inches of hard clay were excavated before reaching the subsoil of sand and clay; it was decided to puddle 18 inches of the surface of this and put

the concrete bottom in without removing any of it. The fresh puddle was put in under the slopes only. The concrete was composed of 1 part cement, 3 parts sand, and 5 parts hand-broken granite to pass 2 inch ring in all directions. The tanks were commenced in April and completed in December, 1911. After finishing the bottom and buttresses the slopes were brought up by filling and puddle, and the concrete placed on the puddle and finished with the shovel.

No rendering or patching was done, and the only trouble experienced has been the settling and cracking of the weir floors, due to the contraction of the filling. These have been since brought up with concrete to the correct level.

Filter-Beds.—The filter-beds are four in number, each 120 feet by 70 feet by 9 feet deep, with a water capacity of 260,000 gallons each. The concrete floors, of the same composition as the settling-tanks, are 12 inches thick, laid on 18 inches of puddle on the original surface, continued under the walls, and formed to fall to a centre channel with expansion joints 10 feet apart between centres. The walls are of Canton red brick in cement mortar faced with Amoy red brick and are vertical where in the water space, and battered 1 in 12 from there to the bottom. The walls are backed with 18 inches of clay puddle, brought up with the filling and coped with 14-inch by 6-inch granite.

The filtering material consists of one course of Amoy bricks on edge laid in cement mortar, one course flat, 12 inches of broken granite cubes measuring not less than $1\frac{1}{2}$ inch or more than 2 inches any way, 6 inches coarse washed gravel to pass $\frac{3}{4}$ inch riddle and be retained by $\frac{1}{2}$ -inch riddle, 6 inches washed pea-gravel, and 2 feet 6 inches washed fine sand. Eighteen 4-inch cast iron air-pipes ventilate each bed. Brick chambers for outlet regulators and steel gangways for inlet valves are also provided.

Outlet regulators pass the water from the filter-beds to the service-reservoir. These consist of a telescopic tube carried by galvanized-iron floats which rise and fall with the water in the filter, and carry an adjustable wire-box, which can be raised or lowered by a small hand-wheel, to increase or diminish the flow.

Two sandwashers are provided to serve the four beds, supplied from the pumping-main, and discharging the dirty water into a creek outside the works.

Work on these commenced in May, 1911, by puddling the site and putting in the floors. It was carried on throughout the wet season, when the walls were built on top of the concrete, and at the end of June had reached a height of 9 feet, the filling being brought up at the same time. Settlement of the walls occurred to the extent of from $\frac{1}{8}$ inch to $1\frac{1}{8}$ inch, causing cracks to appear in the walls at the top which gradually extended to the bottom, and also in the floor, about 12 feet from the edge of the long sides of the filters; the expansion-joints prevented cracks on the short side. These settlements were directly due to the unequal load of the filling and walls upon the soft surface of the



View from Engine House showing Settling Tanks and Filter Beds (or Right)

puddle. They were dealt with by loading the floor inside the area defined by the cracks with the filtering material and bricks and waiting until all movement had ceased, as shown by levels taken each month. In May, 1912, the cracked portions of the walls were rebuilt, the cracks in the floors cut out and run with neat cement grout, and the walls finished and coped. No further settlement occurring, filtering material was put in and the pipes connected.

Service-Reservoir.—The service-reservoir receives the filtered water, and is 102 feet by 79 feet by 17 feet deep, with a capacity of 800,000 gallons. It was originally intended to cover it with brick vaulting and earth, but the foundation proved so bad that it was decided to omit the cover and slope the side walls in a similar way to the settling tanks.

Service-Well.—The service well is of brickwork in cement 1 foot 10½ inches thick, and was constructed in the same way as the intake well.

Pipe-line.—The filtered water on leaving the pumps at Ambow passes to the water-tower at Swatow along a 12-inch cast-iron main, laid about 2 feet below the paddy level, except where it crosses the creeks, where it is carried up the railway-bank and hung to the girders of the railway bridges. Air-valves are provided at all summits, and the pipe does not rise at any point above an imaginary line drawn from the pump discharge to the foot of the water-tower to represent the hydraulic gradient. The pipe-line is divided into fifteen sections by 12 inch stop-valves. Wash-out valves are fixed at intervals of 900 yards. Scraper doors are fixed at intervals of 900 yards.

The pipe-line in the siphons under the River Han have flanged joints, and a 3-inch pipe is put in above them to take the water back to the distributing-main, to supply the district on the railway side of the river, and avoid tapping the pumping main. The lead joints on the pipe line are protected with ¼ inch neat cement.

Water-tower.—The water-tower consists of a cylindrical steel tank, 35 feet in diameter and 22 feet high, with a spherical bottom 9 feet deep, of 150,000 gallons capacity. The top water-level is 83 feet 9 inches above ground, and the tank is supported on eight 60-lb. steel-joist stanchions, 11 inches square braced with steel rods. It is erected on a concrete raft reinforced with rails. The tank is completely covered with a sunshade of 20 gauge corrugated iron, leaving an air space of 4 feet.

A wrought iron staircase inside the supporting framing gives access to a gangway which runs round the tank, and to the inlet, outlet and scour pipes, which are grouped in the centre.

A lightning conductor and electric water-level indicator are provided, the latter showing on a recorder at the engine house at Ambow.

Distributing-Mains.—European residences and offices and most of the Chinese are now supplied by meter, the charge being

5 cash per two buckets of 4 gallons each which is equal to 1s. per 1,000 gallons. The old rate for the filthy fluid referred to in the analysis was 1 dollar per sixty buckets, about 6s. 6d. per 1,000 gallons.

The works were carried out from the designs and under the supervision of Messrs. Leigh & Orange, Civil Engineers and Architects, Hongkong. The Contractors for the whole work were Messrs. Macdonald & Co. of Hongkong.

COST OF THE WORKS

Office and quarters at Ambow	\$ 15,300.00
Embankments	14,600
Intake	2,450
Engine and boiler Houses	44,600
Pumping machinery, electric lighting set, &c.	82,400
Excavation for pumping main	1,240
Settling tanks	105,200
Filter beds	63,950
Service reservoir	28,600
Service well	3,550
Intake well	990
Pipes at Intake	24,150
Pumping main	199,200
Town distributing pipes	117,270
Water tower	35,080
Extra work and materials in spare parts, tools &c.	8,000
	<hr/>
	746,680
Way leave along railway for pipe line	56,250
Land, believed to be about	23,500

Total Exclusive of Engineers' fees.. \$826,330

COMPARATIVE ANALYSES OF THE WATER

	1	2	3	4	5
	Swatow	Canton filtered	Tytam filtered	Pure and wholesome	Ambow S. W. W.
Quantities expressed in Grains per Imperial gallon.					
Appearance in 24 inch tube.	Turbid	colourless	colourless	colourless	Opalescent
Total solids dried at 212°F.	119.0	5.8	2.8	5.0	4.0
Chlorine in chlorides	69.3	0.2	0.6	1.0	0.3
Hardness in chalk grains or degrees	19.0	5.0	—	6.0	1.5
Ammonia	0.007	—	0.0021	0.0014	0.0028
Albuminoid ammonia	0.0042	0.0028	0.0056	0.0035	0.0014
Oxygen absorbed at 80°F. in 4 hours.	—	0.019	0.015	0.035	0.052
Nitrogen in nitrates and nitrites	0.016	0.008	0.012	0.01	0.008
Sugar test for detection of sewage	—	none	none	none	none
Poisonous metal	—	none	none	none	none

Sample No. 5 was taken in sterilised 1 gallon bottles plunged 5 feet below the surface of the water, the cork withdrawn and replaced under water and immediately sealed and sent to Hongkong where it was analysed by the Government analyst.



Water Tower with Sun Shade cover to Sides and Roof



THE NEW CHIEN-MEN FROM A PLASTER MODEL SHOWING APPEARANCE OF GATE AFTER REMOVAL OF THE CURTAIN WALL.

IMPROVEMENTS AT PEKING

The Alterations at the Chien-men

On Wednesday, June 16, His Excellency Chu Chi-chien, Minister of the Interior, began the work of demolishing and reconstructing the old gateway of the Peking Chien Men, by removing the first stone, thus giving effect to the order of His Excellency President Yuan Shih-kai, that "a new way of communication shall be opened."

The higher authorities of Peking in discussing plans for the project submitted by the architect Mr. Rothkegel, insisted that all the buildings on the Chien Men Gate (the Imperial Gate of Peking) which were of any architectural beauty whatever should be carefully preserved, and that the pearls of Chinese architecture, the Northern and Southern Imperial Gates, should remain in all their old splendour to gladden the eyes of many future generations.

The reason which necessitated the pulling down of the walls enclosing the inner court of the Chien Men, was that these hindered the free movement of the heavy traffic. As the gateway under the northern tower was only seven metres wide, and consequently not large enough for the purpose, the walls surrounding the court had to be removed, and there will be constructed in their place two large roads 20 metres in width, which will converge at the bridge over the canal on the south side of the gate.

At the point where the two new roads will meet the city wall, four tunnels are being constructed, each measuring 9.50 metres in width, two for each street. Northwards, the streets will be so laid as to meet the tunnels and then continue onwards. These roads will be properly built with modern improvements, sidewalks, conduits, etc. The rain water will be drained off in a southerly direction.

The two northern ramps to the city wall will remain, and the old popular walk on the wall so cherished by the inhabitants of Peking, will be preserved. There will be no architectural changes on the north tower. Wide, showy stairways will lead to the southern tower, ending in a roomy terrace on the same height as the present wall, 13 metres from the roadway. On this southern tower a gallery two metres wide will be constructed on the southern, eastern, and western sides, thus offering a magnificent view of Peking and its surroundings, and the interesting flow of traffic. The interior of this southern tower will be renovated, and may be used either for exhibition purposes or as a museum.

The realisation of this reconstruction naturally necessitated the acquirement by the Chinese Government of several lots of valuable property together with the buildings thereon.

The large square measuring about 100 metres wide by 300 metres long, situated between the two roads leading from south to north, will not be built on, but will be surrounded by a handsome and tasteful low parapet wall, and the interior will be planted with lawns and shrubs. The two old walls situated in the square will remain, but will be suitably embellished according to the idea of Mr. Chu Kin-kow (Co-director of the Peking-Mukden Railway).

Praise for the final achievement and carrying out of this very useful and necessary project is due to His Excellency Chu Chi-chien, Minister of the Interior; Liang Tung-yen, Minister of Communications; Mr. Mai Chai-chee (Dr. Mark), Vice-Minister of Communications, and Mr. Chu Kin-how, Co-Director, Peking-Mukden Railway. These gentlemen have



OFFICIALS INTERESTED IN THE RECONSTRUCTION OF THE GATE

On the left Dr. George Mark, Vice-Minister of Communications (holding the silver pick): in the centre, His Excellency Chu Chi-chien, Minister of the Interior; on the right Mr. Chu Kin-how, Co-Director, Peking-Mukden Railway.



TEARING DOWN THE CURTAIN WALL

His Excellency Chu Chi-chien, Minister of the Interior, beginning the work of demolition at the Chien-men by removing the first bricks with a silver pick.

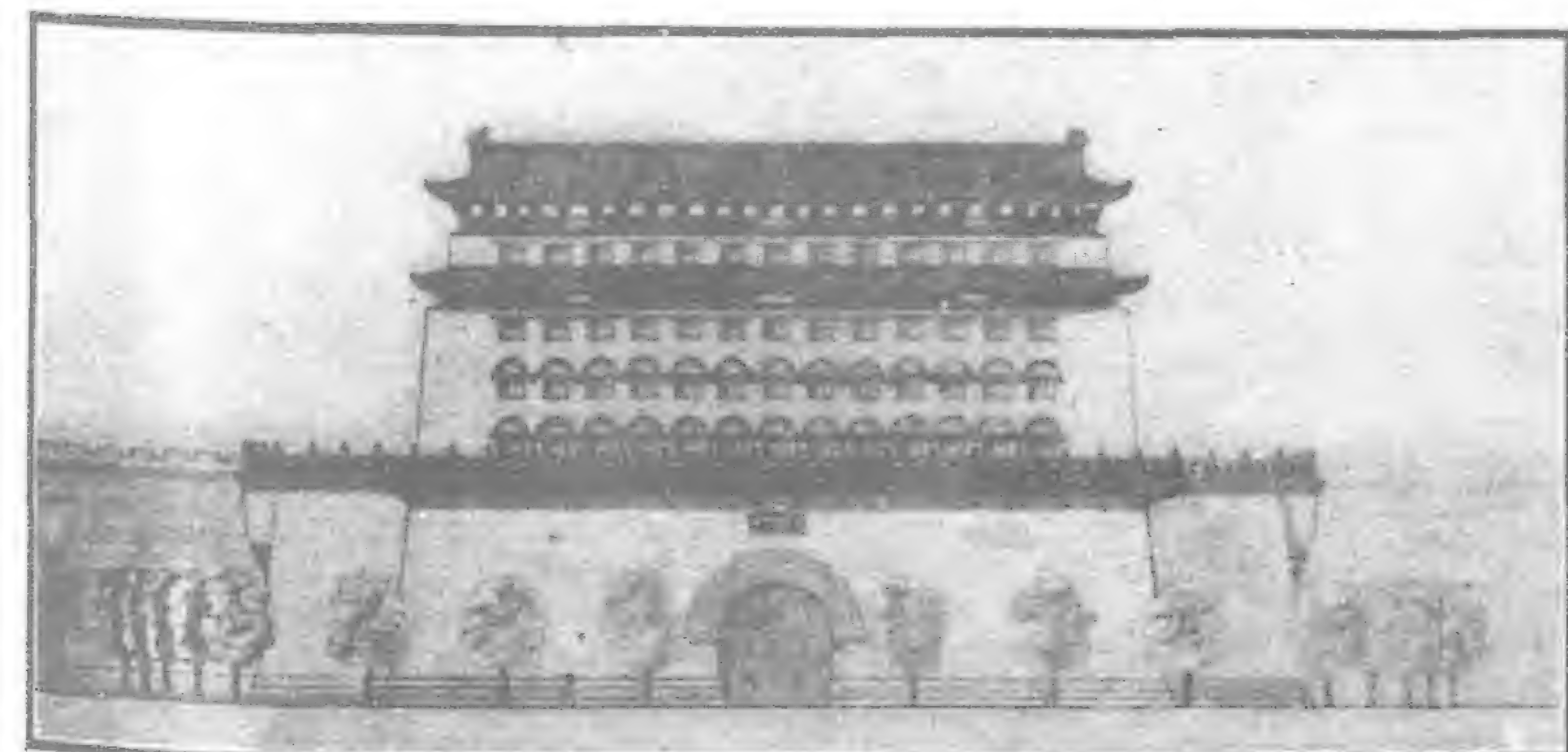
pressed forward the project towards final fulfillment with untiring zeal and forethought. After plans and designs had been submitted and altered so as to arrive at the

best and at the same time the most workable scheme, Mr. Rothkegel, the architect, has been able to submit plans which have at last found favor and been accepted. He,

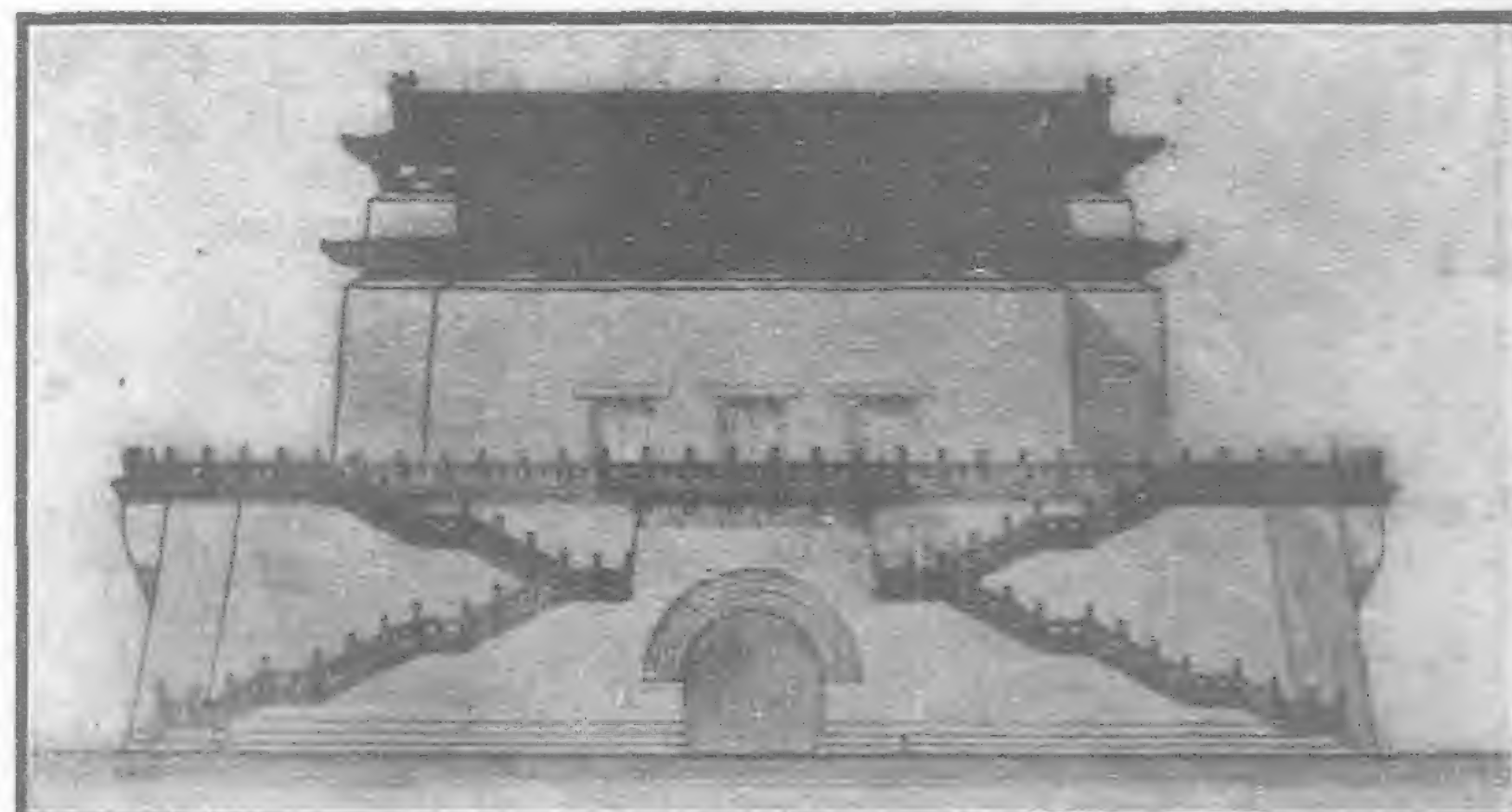


THE CHIEN-MEN, PEKING

This photograph overlooking the Chien-men clearly shows the system of construction of the gateways in the Tartar Wall of Peking. The clock-tower in the foreground of the picture is part of the terminal station of the Peking-Mukden Railway, while the arrow points to the terminus of the Peking-Hankow Railway. Work is now progressing in the removal of the intervening walls forming the curtain of the Chien-men, which will leave only the two gate towers standing. This will enable the construction of a connecting line of railway, as shown in a map on another page. The tower on the right is the main tower of the Chien-men.



SOUTHERN ELEVATION OF NEW CHIEN-MEN, FROM DRAWINGS BY THE ARCHITECT



NORTHERN ELEVATION OF NEW CHIEN-MEN



HIS EXCELLENCY CHU CHI-CHIEN, MINISTER OF THE INTERIOR

too, has been entrusted with the carrying out of the work, which we understand is to be completed in the short space of about four months.

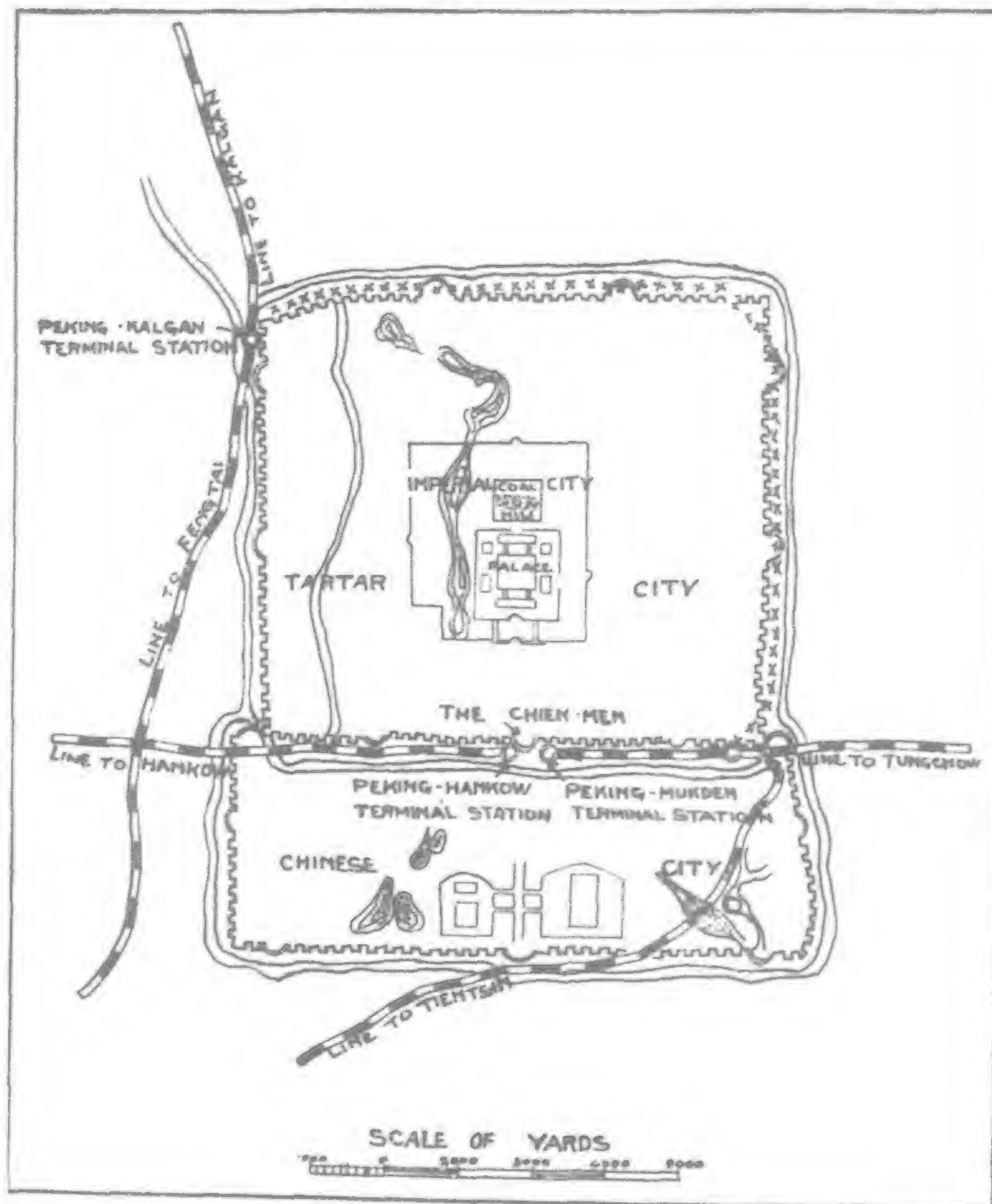
The specifications for the work call for the demolition of the eastern and western semi-circular walls between the Chien-men Gate and the southern tower, all good materials from these walls to be used for reconstructional work. At the junction points of the eastern and western adjoining walls to the southern tower, a new wall is to be built on each side 2 metres thick. On the top



MR. CHU KIN-HOW, CO-DIRECTOR OF THE PEKING-MUKDEN RAILWAY, who is largely responsible for the alterations of the Chien-men.



EASTERN SIDE OF TOWER AFTER REMOVAL OF CURTAIN



MAP SHOWING THE CHIEN-MEN

The line of crosses shows the route of the connecting railway.

of these two walls two large oval over-hanging balconies of reinforced concrete are to be built from good bricks to be taken from the old walls. On the northern side of this gate tower two flights of stairs are to be built. They will consist of eighty-two steps, each step three metres long. The steps of the staircase are to be made of new stone of good quality, 15 cm. high by 34 cm. deep, smoothly dressed and laid in a bed of cement. There will be four landings to each stairway. The foundations and the supporting masonry are to be constructed in the same style and quality as existing work. Round the south, east and west sides of the gate top, a new balcony six feet high will be built of reinforced concrete. Staircase, gallery and platform are to have balustrades of reinforced concrete with richly worked Chinese ornamentation. The interior of the south gate tower is to be provided with eight new doors opening on the gallery, and also eight new windows. All the existing eighty-two windows are to be provided with glass window frames. The old shutters are to be removed. The northern side of the interior at present open to the roof is to have three stories corresponding to those on the southern side of the interior. The existing stairs inside being too steep and too small are to be removed and replaced by a new broad and convenient staircase. On the south side, 50 windows are to be decorated with semi-circular mouldings. At the junction points of the semi-circular walls and the main wall two openings are to be made on either side of the Chien-men Gate, each to be nine metres wide and eight metres high. Each of the four openings is to be provided with a high double winged gate four metres high, of pressed sheet steel to move on rollers on iron rails laid in the roadway. On the side of the semi-circular walls which are now being demolished, two roads are being constructed. All the existing stone paved roads are to remain, but they will be renovated. The new roads are to be laid with stone rubble covered with sharp sand to be pressed to a depth of 30 cm. by steam rollers. The roads are to have sidewalks, and iron chains on reinforced concrete pillars are to be erected.

The two small yellow tiled houses which used to grace the



ANOTHER VIEW OF THE CHIEN-MEN

This view shows the passage way through the main pavilion, as well as the curtain which is to be removed



THE ANTING-MEN

As in the case of the Chien-men the stone curtain shown in this picture will be removed, leaving the towers standing.

circular wall, have been pulled down and will be re-erected on the north side of the Chien-men tower.

The Care of Motor Tyres.

Despite the fact that tyres wear out sooner than any other accessory of a motor car, many motorists give them no more attention than they give the springs. They seem to regard tyres as a necessary evil, at best, little realizing that the mileage now obtained from tyres, far greater as it is than that of a few years ago, could be still further increased if tyres received the same watchful care that is given to other destructible supplies.

The proper care of tyres is not a burden upon any motorist. It is a matter merely of watchfulness, of anticipating rather than repairing trouble. A knowledge of the necessities of the modern tyre is first needed; then the rest is easy.

A motorist should know these eight things:

The correct use of tyre sizes and types.

The details of application and inflation of tyres.

The causes of excessive wear.

The causes of tyre injuries, and the effect of neglect.

The use and abuse of tread attachments and tyre fillers.

The care of inner tubes.

The causes of tyre deterioration, and proper storage.

What to demand in rims and flaps.

It formerly was necessary to gather this information in haphazard manner, wherever bits of it might be available, but the timely booklet prepared by the manufacturers of Firestone tyres gives it all in a form that fits the pocket of either motor car or coat. Under approximately the same headings as are given above all the facts essential to getting the utmost mileage from tyres are discussed in clear, simple language.

An easy guide to knowledge of the proper tyres is found, for instance, in the table of weights that a tyre will support without undue strain. A 34x4 tyre will sustain a weight of 650 pounds in the front and 800 pounds in the rear—a total weight of 2900 pounds. Clearly, a 30-hundred-weight car should carry larger tyres.

A timely word is said regarding inflation of tyres in hot weather, and the old bugbear of danger of blow-outs from over-inflation is vanquished. An increase in temperature of 20 degrees increases the pressure by only three pounds. Thus, if a tyre is inflated to 70 pounds pressure, at a temperature of 60 degrees, an increase of temperature to 90 increases the tyre pressure only to 75 pounds.

The motorist should avoid driving in ruts.

The sides of tyres are unnecessarily scraped, and in the long run the tyres are bound to deteriorate. Driving in a rut with the tyres partly deflated is the height of tyre abuse.

Much has been said, but much more can still be said, of the foolishness of allowing tyres to stand in oil. Oil is a solvent of rubber, and the ultimate effect is as certain as if clothing were allowed to stand in acid. Even the grease that often is spattered upon tyres from leaking differentials should be wiped off at the end of the day.

The necessity of prompt repair of punctures and cuts is obvious. It is a good plan to have a workman experienced in handling tyres, inspect them at least once a week, and carefully fill all cuts in the rubber or fabric. Water is almost as damaging in cuts as stones and other foreign substances, for while rubber is waterproof, the basic fabric is not.

It would be hard, within the compass of this article, to include all the good advice of the 50-page booklet from which the above information has been taken. It should be in the hands of every motorist, and, what is more, the knowledge in it should also be in his head. Many miles could be saved by following to the letter the principals there laid down.

STATEMENT OF RECEIPTS AND DISBURSEMENTS OF SALT REVENUE.

For the period from 21st May, 1913, to 31st December, 1913.

RECEIPTS.

	\$
1. Collections per District Inspectorates	14,501,802.33
2. Remittances from Government Transportation Offices	3,074,349.37
3. Interest credited by Group Banks	8,784.07

Total Dollars ... 17,584,935.77

DISBURSEMENTS.

	\$
A. Administration Expenses defrayed	2,064,229.65
B. Transfer charges and Loss by Exchange	831,421.74
C. Special Government Withdrawals	1,248,330.99
D. Charges and Obligations secured on Salt Revenue	—
E. Balances in various Offices	544,918.23
F. Balances in Bank of China	756,745.09
G. Transfers in Transit to Group Banks	1,137,070.29
H. Balances in Group Banks	11,002,219.78

Total Dollars ... 17,584,935.77

SUMMARY OF REVENUE AND EXPENDITURE

For the period 21st May, 1913.

1.	2.	3.	4.	5.	6.	7.	8.	9.
District Inspectorates in Producing Districts.	Quantity of Salt Released.	Approximate Average rate of Direct Duty imposed on salt released.	Revenue Receivable.			Revenue Received.	Revenue Outstanding at 30/9/13.	Admin. Incurred.
	Piculs Ssu-ma scale.	\$	Direct Duty.	Miscellaneous Collections.	Total.			
			\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
Fengtien	1,535,780	.690	1,059,508.50	50,129.24	1,109,637.74	244,976.95	864,730.79	150,931.06
Changlu (a)	1,438,941	1.403	2,019,094.61	7,275.14	2,026,369.75	1,784,392.30	241,977.45	298,455.24
Shantung	792,692	1.186	940,001.46	344,970.42	1,284,971.88	772,552.75	512,419.13	69,689.50
Hotung	290,263	1.254	364,234.00	—	364,234.00	281,798.72	82,435.28	119,569.03
Lianghwai (b)	1,442,666	.371	535,647.93	317,050.92	852,698.85	834,034.60	18,664.25	550,600.06
Liangcheh	162,837	2.031	268,937.68	233,559.29	442,496.97	442,496.97	—	108,949.42
Fukien (c)	424,272	.530	224,864.08	87,282.35	312,146.43	312,146.43	—	52,625.95
Kwangtung	519,613	1.514	786,441.00	613,197.60	1,399,638.60	1,391,891.76	7,746.84	166,583.76
Total	6,547,064	.938	6,138,729.26	1,653,464.96	7,792,194.22	6,064,223.48	1,727,973.74	1,517,404.04

Note.—(a) The amount of \$298,455.24 shown under the heading Administration Expenses incurred in the Changlu District includes \$62,071.08 for expenses of the Central Salt Administration and Chief Inspectorate.

(b) The Lianghwai figures merely show revenue and expenditure in Hwaipei and Huainan and do not include revenue and expenditure in the four Provinces, South Anhui, Kiangsi, Hunan and Hupeh.

(c) In the Fukien Province salt is purchased, transported and sold on behalf of government and the direct duty on salt transported is credited to the Salt Revenue Account by the Salt Commissioner.

SUMMARY OF REVENUE AND EXPENDITURE

For the period 1st October, 1913.

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
District Inspectorate in Producing Districts.	Quantity of Salt Released.	Approximate Average rate of Direct Duty imposed on Salt released.	Revenue Receivable.			Revenue Outstanding at 1/10/13.	Total.	Revenue Received.	Revenue Outstanding at 31/12/13.	Admin. Incurred.
	Piculs Ssu-ma scale.	\$	Direct Duty.	Miscellaneous Collections.	Total.					
			\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
Fengtien	729,253	.698	508,783.00	31,622.07	540,405.07	864,730.79	1,405,136.76	483,560.38	921,576.38	94,439.00
Changlu (a)	1,974,757	1.137	2,245,746.73	859,350.59	3,105,097.32	241,977.45	3,347,074.77	2,552,224.82	794,849.95	226,108.43
Shantung	505,381	.983	496,932.95	24,505.97	521,438.92	512,419.13	1,033,858.05	816,277.18	217,580.87	48,494.30
Hotung	282,383	1.271	350,025.91	—	350,025.91	82,435.28	441,461.19	356,389.23	85,071.96	51,637.80
Lianghwai (b)	1,892,063	.361	683,862.48	532,439.43	1,216,301.91	18,664.25	1,234,966.16	1,154,953.20	80,012.96	391,462.70
Liangcheh	381,404	1.619	614,115.82	226,685.69	840,801.51	—	840,801.51	799,817.46	40,984.05	72,335.90
Fukien (c)	337,573	.530	178,914.35	145,981.30	324,895.65	—	324,895.65	324,895.65	—	36,222.50
Kwangtung	931,320	1.513	1,409,568.00	539,895.93	1,949,463.93	7,746.84	1,957,210.77	1,949,463.93	7,746.84	77,381.20
Total	7,034,134	.924	6,496,950.14	2,360,480.98	8,857,431.12	1,727,973.74	10,585,404.86	8,437,581.85	2,147,823.01	998,082.60

Note.—(a) The amount of \$226,108.43 shown under the heading Administration Expenses incurred in the Changlu District includes \$57,160.00 for Expenses of the Central Salt Administration and the Chief Inspectorate.

(b) The Lianghwai figures merely show revenue and expenditure in Hwaipei and Huainan and do not include revenue and expenditure in the four Provinces, South Anhui, Kiangsi, Hunan and Hupeh.

(c) In the Fukien Province salt is purchased, transported and sold on behalf of government, and the direct duty on salt transported is credited to the Salt Revenue Account by the Salt Commissioner.

STATEMENT OF REVENUE AND EXPENDITURE IN THE DISTRICT OFFICES.

For the period from 21st May, 1913, to 31st December, 1913.

	\$
1. Revenue Receivable	16,649,625.34
2. Sundry Creditors' Accounts—Expenses outstanding at 31/12/13	451,257.07

Total Dollars ... 17,100,882.41

	\$
A. Administration Expenses incurred	2,515,486.72
B. Transfer Charges and Loss by Exchange	831,421.74
C. Special Government Withdrawals	1,248,330.99
D. Charges and Obligations Secured on Salt Revenue	—
E. Sundry Debtor Accounts—Revenue outstanding at 31/12/13	2,147,823.01
F. Transfers to Group Banks	9,056,156.63
G. Balances in Bank of China at 31/12/13	756,745.09
H. Balances in Various Offices at 31/12/13	544,918.23

Total Dollars ... 17,100,882.41

TURE IN THE DISTRICT OFFICES.

to 30th September, 1913.

10.	11.	12.	13.	14.	15.	16.	17.	18.
Administration Expenses.		Special Government Withdrawals.			Transfer Charges and Loss by Exchange.	Transfers to Group Banks.	Cash Balances, at 30/9/13.	
Drawn.	Outstanding at 30/9/13.	Withdrawn.	Refunded.	Outstanding at 30/9/13.			In Bank of China.	In Various Offices.
\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
67,795.52	83,135.54	—	—	—	—	—	177,111.43	—
172,900.69	125,554.55	310,091.21	267,224.96	42,866.25	43.71	726,016.34	842,565.31	—
55,259.61	14,429.89	159,189.07	90,397.35	68,791.72	Cr. 49.87	—	644,615.64	3,935.65
119,560.05	—	133,682.64	—	133,682.64	—	—	—	28,547.03
550,600.06	—	246,364.03	4,590.57	241,764.46	—	—	32,594.24	9,075.84
86,211.05	22,738.37	776,935.60	602,442.29	174,493.31	165.00	60,000.00	37,303.40	84,324.21
52,625.95	—	187,149.61	—	187,149.61	7.34	649.66	—	71,713.87
141,747.02	24,836.74	796,487.42	—	796,487.42	—	—	—	453,657.32
1,246,708.95	270,695.09	2,609,899.58	964,664.17	1,645,235.41	166.18	786,666.00	1,734,190.02	651,253.92

TURE IN THE DISTRICT INSPECTORATE OFFICES.

to 31st December, 1913.

12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.
Administration Expenses.			Special Government Withdrawals.			Transfer Charges and Loss by Exchange.	Transfers to Group Banks.	Cash Balances at 31/12/13.		
Drawn.	Outstanding at 1/10/1913.	Outstanding at 31/12/13.	Withdrawn.	Refunded.	Outstanding at 1/10/13.	Outstanding at 31/12/13.		In Bank of China.	In Various Offices.	
\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
10,349.42	83,135.54	167,225.78	—	—	—	—	Cr. 10,961.07	495,173.45	162,966.09	3,143.92
143,473.06	125,554.55	208,189.02	—	32,600.00	42,866.25	10,266.25	4,846.58	2,719,296.52	559,773.07	—
62,924.28	14,429.89	—	—	—	68,791.72	68,691.72	18,380.37	1,378,902.01	4,538.39	82.81
51,337.83	—	300.00	—	—	133,682.64	133,682.64	—	—	—	333,598.43
391,462.72	—	—	46,477.71	236,288.82	241,764.46	51,953.35	1,684.37	955,215.63	3,661.80	34,409.87
30,159.93	22,738.37	64,914.34	—	174,493.31	174,493.31	—	Cr. 621.26	962,541.26	25,805.74	78,052.71
36,222.55	—	—	—	—	187,149.61	187,149.61	3,464.29	306,732.70	—	50,189.98
91,599.01	24,836.74	10,627.93	—	—	796,487.42	796,487.42	814,462.27	1,451,628.46	—	45,440.51
817,520.70	270,695.09	451,257.07	46,477.71	443,382.13	1,645,235.41	1,248,330.99	831,255.56	8,269,490.63	756,745.09	544,918.23

RESUME OF STATEMENTS SHOWING THE RESULT OF THE OPERATIONS OF THE GOVERNMENT AND OTHER TRANSPORTATION OFFICES.

During the Period 21st May to 31st December, 1913.

Name of Office.	Total Revenue due by the Transportation Office.	Total Revenue Placed to the Credit of the Government in Bank of China.	Working Expenses: Establishment and Contingent Charges and Police Expenses.	Amount paid over to the Group Banks.	Balance still Outstanding on 31st December, 1913.	Remarks.
Hupei	\$ 6,393,605.76	No details, see remark.	\$ 152,327.37	\$1,658,635.51	\$ 4,582,642.88	The amounts at credit in the Bank of China at Hupei, Kiangsi and Anhui and in the Bank of Communications at Hunan, include the Merchants' share of profit and the amounts are consequently not shown. The amount received on account of Anhui, by the Group Banks, should also include \$139,761.83 (at book rate) which was paid over to the Acting Commissioner of Customs, Tatung, under the Loan agreement.
Hunan	4,519,595.04	No details, see remark.	191,210.25	247,173.78	4,081,211.90	
Kiangsi	4,601,262.92	No details, see remark.	70,309.30	610,291.64	3,920,661.98	
Anhui	3,413,634.00	No details, see remark.	87,673.25	140,864.51	3,036,335.40	
Kirin	597,453.04	\$ 80,662.69	131,410.06	See remark	507,792.35	
Heilung Chiang	475,472.48	Nil	85,356.74	Nil	475,472.48	The revenue of Kirin was merged in the revenue paid by merchants and was remitted to the Group Banks at Shanghai by the District Inspectorate of Fengtien. The revenue from the Changlu, Hotung, Shantung and Cheng-Yeng Kwan Transportation Offices was paid into the Bank of China and was merged in the collections made by the District Inspectorates and transferred to the Group Banks for credit of the respective District Inspectorates. Kalgan Office showed a profit of \$5,216.27. In Chin Pei, the working expenses, amounting to \$33,225.30 for the months September/December, were only deducted from the Bank of China's balance in January, 1914, and also \$126.45 loss on conversion.
Changlu	1,957,250.40	1,586,462.10	438,885.00	See remark	370,788.30	
Jehol	47,879.00	10,000.00	21,349.00	Nil	16,530.00	
Kalgan	274,994.01	148,932.96	131,577.32	Nil	<div style="display: flex; align-items: center;"> { <div> Nil 5,216.27 <i>(Profit)</i> </div> </div>	
Chin Pei	167,180.43	49,060.90	125,024.80	14,873.55	26,382.08	
Hotung (Shansi)	281,560.94	10,529.12	No returns	See remark	271,031.82	Difference on conversion of Mexican \$33,593.57, collected at market rate but entered at fixed book rate
Shantung	161,702.52	155,561.17	12,390.00	See remark	6,353.89	
Cheng Yeng Kwan	334,156.28	73,000.00	No returns	Nil	261,156.28	
Su Wu Shu	444,940.43	393,540.75	19,673.77	393,510.38	31,725.91	
Grand Total...	\$23,670,689.14	\$2,516,449.69	\$1,468,086.87	\$3,074,349.37	\$17,581,729.38	

ANALYSIS OF ADMINISTRATION EXPENSES

1st October to 31st December, 1913.

CENTRAL SALT ADMINISTRATION (鹽務署) AND CHIEF INSPECTORATE.

Date 1913	Fixed \$	Yen Wu Shu Contingent \$	Fixed \$	Chief Inspectorate Contingent \$	Total \$
October	5,372.53	2,654.06	5,423.06	539.82	13,990.37
November	6,392.00	3,105.59	6,296.83	4,465.42	23,259.93
December	6,657.71	848.45	13,420.35	1,987.68	22,914.19
Total...	18,422.33	6,609.00	25,140.24	6,002.92	57,164.49

(a).—One Picul Ssu-ma scale equals 140 lbs. avoirdupois.

(b).—The quantities entered as Ssu-ma Piculs are, in some Districts, approximate only.

(c).—Direct Duty in the case of Fukien District represents the payments made by the Salt Commissioner on the estimated quantity of salt transported which is based on the allotment last in force during the late Ching dynasty.

(d).—Miscellaneous Collections include all taxes, fees and cesses payable on account of salt, over and above the Direct Duty levied at the time of issue from the salt works and depots.

(e).—The figures representing the transactions in the Kwangtung District are provisional. The loss on exchange is due to acceptance of paper currency at nominal value, in payment of taxes, the average value for the period being Canton Note Dollars 100=Hongkong Dollars 63.88.

(f).—The following rates of exchange have been used:—

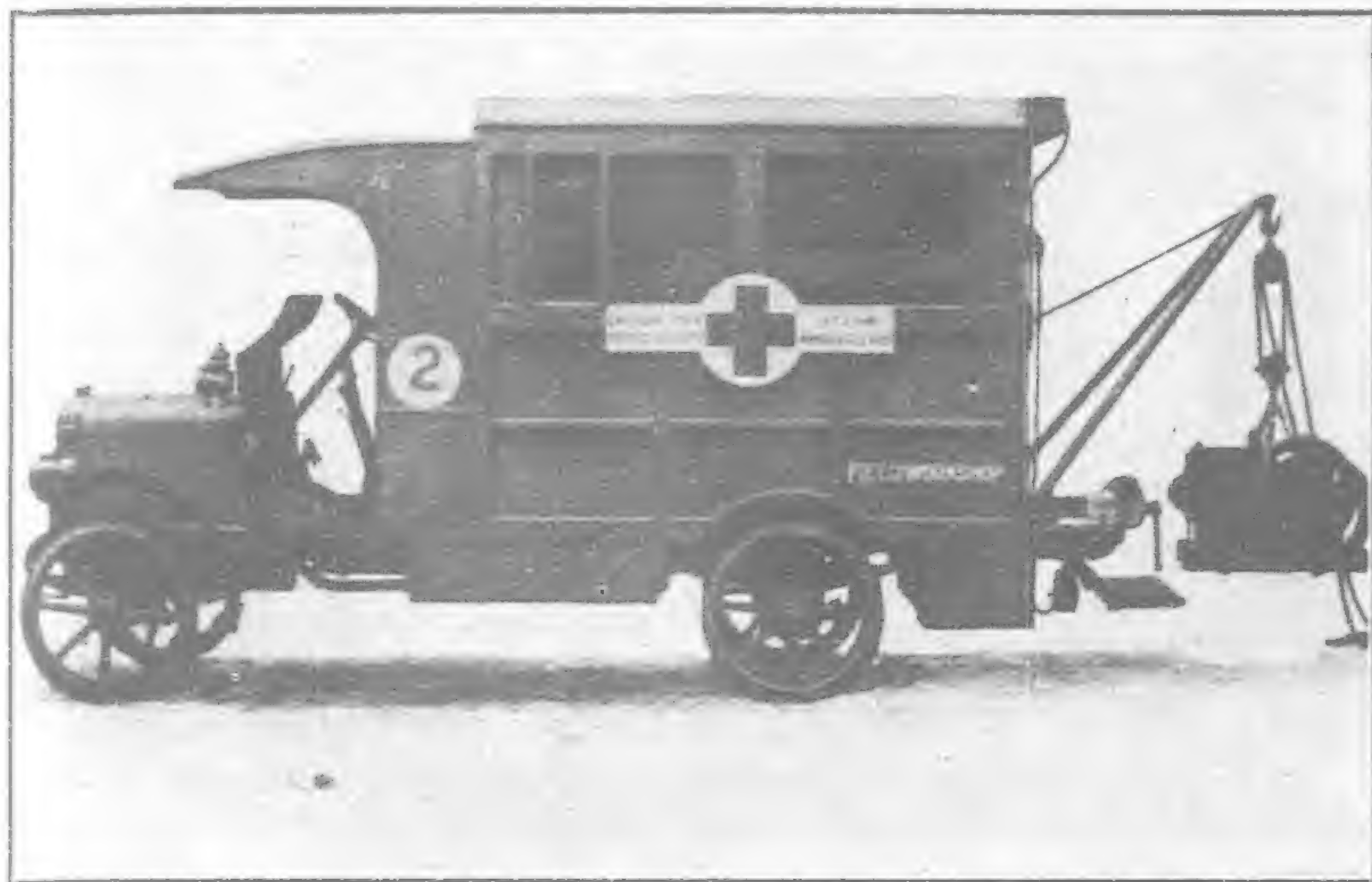
\$100=Kuping Tls. 66.666=Shanghai Tls. 73.066=Silver Yen 106.13955

(g).—"Fixed Charges" comprise salaries and wages, and "Contingent Charges" comprise the cost of maintaining establishments and travelling allowances and all miscellaneous and fluctuating expenditure.

Commercial Car Workshop

Commercial Cars, Limited, has presented a one ton chassis to the British Red Cross Society which has equipped the chassis as a field workshop of which the following is a detailed account:

The workshop is fitted on a 1 ton B.C. type live axle chassis manufactured by Commercial Cars, Ltd., Luton, after designs by the Royal Automobile Club Engineering Department, of which Mr. F. W. Hudlass is the chief engineer. The general body arrangements, the hoisting gantry, and the general equipment of tools and parts are excellently thought out and many compliments have been paid the Royal Automobile Club on the finish of this first class machine. The aim of the designers has been to provide a compact little lorry that is not only capable of



WORKSHOP CAR READY FOR REPAIR JOB

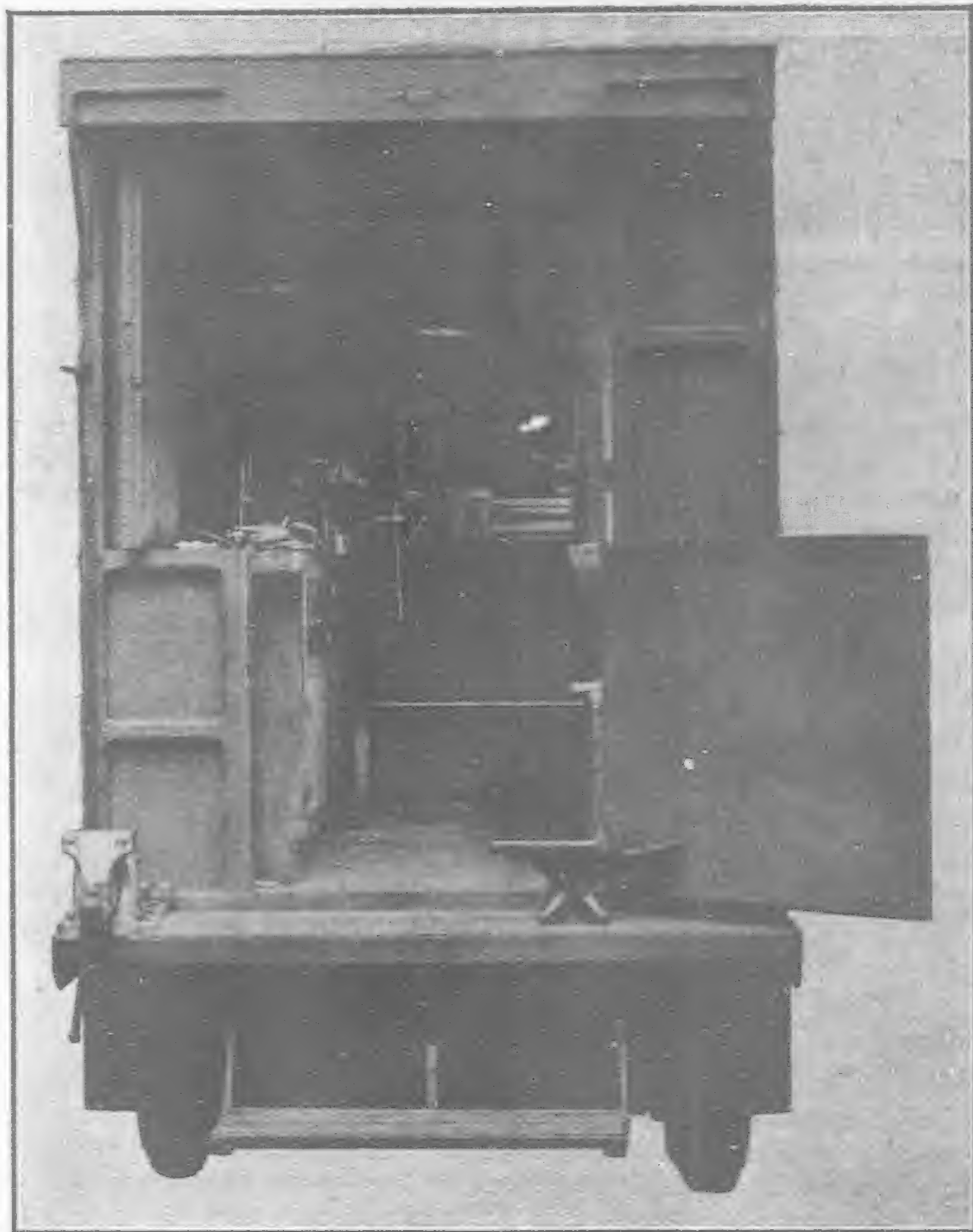
salvaging a car which has had a bad smash, but also of carrying out any small repairs found to be necessary.

On the rear of the vehicle sheer legs are provided which project about 4 ft. Upon these can be suspended the front or rear of a car which, in this position, can be towed on the two remaining wheels. The sheer legs also can be used for lifting engines and gearboxes out of the frame. They stand on a large rear platform step which is a bench for heavy work, and upon which is fixed a heavy Vice. The interior of the vehicle is fitted up with bench, racks, and cupboards for tools, etc., also a 5½ inch Centre Lathe and Emery Grinder, the former being driven from the clutch shaft by a simple arrangement of countershafts.

The tool equipment consists of blacksmiths tools sufficient for small forgings and the straightening or bending of any parts; tinmen's and copper smiths tools, for the purpose of soldering and brazing of any reasonably sized part, heat being derived from a large blow-lamp fed by petrol; fitters tools, such as are used for dismantling, repairing, and re-erecting any part of the motor vehicle, and which include material and equipment for white metalling bearings, with scrapers for re-fitting same, also a small surface plate and a comprehensive selection of measuring and reference tools; turners tools, including drills, reamers, expanding mandrills, etc., in sufficient quantity to execute extensive repairs.

The material supplies include tool steel, nickel steel, mild steel, and special steel for keys in a variety of sizes, also bronze and brass rods of various sections; sheet metal, wire, brake-lining materials, packing and jointing materials, and a large selection of useful sizes of bolts, nuts, washers, split pins, taper pins, etc.

Each repair van is sent out in charge of a competent man with a suitable helper; and if possible, the helper is chosen for his knowledge of some particular craft with which the charge hand is not thoroughly acquainted. The vehicle is lit by acetylene gas, and several small hand-lamps provide light for work at night.



COMPLETE REPAIR SHOP ON "COMMER CAR" CHASSIS

The head lamps provided are of the self-contained type so that they can also be used as a hand-lamp when required.

Great care has been given to the selection of the spanners, of which a large variety are included in the equipment, so as to provide if possible any particular type from the largest to the smallest which may be required to negotiate nuts in an inaccessible position.

A glance at the list of the tools provided would be sufficient to prove to the practical man that these vehicles are in every way as complete, if not more so, than the average county garage.

PHILIPPINE LUMBERING

Cadwallar-Gibson Lumber Co., Bataan, has increased its forest operations since the rains ceased. More laborers are being employed every day and railway construction is being pushed towards the Lamac forest reserve where a heavy stand of timber awaits the company. On this road a new concrete bridge has been started and is expected to be open for traffic by February. The bridge is 100 feet long and 50 feet high and is the longest the company has built. At the present the Cadwallar-Gibson Lumber Co.

The Kolambugan Lumber & Development Co., Kolambugan, is constructing a larger mill, equipped with bandsaws, live rolls, log turners, edgers, trimmers, etc.

Mr. Bolander of the Emerson Hardwood Co. of Portland, Ore., inspected and graded some 52,000 board feet of tanguile, red lauan, white lauan and almon at Kolambugan. This lumber is for export to the United States.

Port Lebak Lumber Co. recently filed papers of incorporation and will conduct their business at Lebak, Cotabato, Mindanao, where the company has a mill of 17,000 board feet capacity per day. This mill has been operated during the past year by Mr. Kidwell, president of the Cotabato Lumber Co., who is a member of the new concern.

W. A. Wiren, manager of Dungan-Dungan plantation in Bangui, Ilocos Norte, recently erected a sawmill on the hacienda. It is equipped with a 30-horsepower boiler, a 25-horsepower engine and circular saw. It has a capacity of 4,000 board feet a day. The mill is now working on government as well as private contracts.

CHINESE WALNUT INDUSTRY

The Chinese or Manchurian walnut (a type of the *Juglans regia*) is grown in a number of districts in the Provinces of Chihli, Shansi, Honan, and Shantung. In Chihli Province the three principal districts are Lanchow and Changli, which adjoin each other, and are about 100 miles north and east of Tientsin on the line of the Peking-Mukden Railway; also the district of Changpingchow, which lies about 30 miles north of Peking. These three districts produce the best grade of walnut which is exported from Tientsin. In Shansi Province the district of Fenchowfu produces large numbers—in fact, walnut trees may be found in almost any of the hilly districts in the four provinces mentioned. The greater part of the nuts exported from Tientsin, however, are raised in Chihli Province.

THREE GRADES

There are three grades of walnuts which are known to the trade here:

First. The double-shelled nut, which consists of two shells in addition to the green outer husk. This brings the lowest price of any grade on account of the difficulty of extracting the kernel.

Second. The medium hard-shelled nut. This forms the bulk of the nuts raised; it is grown in a great many different districts, and is exported from Tientsin to America in large quantities. The shells are of varying degrees of hardness.

Third. The paper-shelled nut, which is grown only in the districts of Changlihsien and Changpingchow. The shells of these nuts are very thin, and crack easily in the hand.

The nuts seldom grow in the wild state, neither can they be said to be highly cultivated. The walnut trees were planted originally, and are cultivated more or less by the Chinese farmers, but no attempt has been made to improve the stock by grafting or other methods. Each farmer owns a few trees, perhaps 25 to 100.

HARVESTING AND SHIPPING

When the harvest season arrives, the local dealer buys up the farmer's crop and brings it to Tientsin, where it is sold to the Chinese wholesale commission merchant, or to the comprador of a foreign firm, and by him in turn sold to the foreign exporting house.

The harvest season for the soft shelled walnut is from September 10 to 15, and for the hard shelled three to four weeks later. The greater portion of the nuts are brought to Tientsin and exported in the shell, but some of them are shelled in the interior and the kernels brought to Tientsin in thin wooden cases of various sizes holding 50 to 100 pounds each. These are repacked by the foreign exporter in strong wooden boxes before shipping abroad. In some cases these boxes are provided with holes over which wire netting is placed to allow ventilation, while by other firms this precaution is not deemed necessary. The nuts in shells are exported in bags weighing 100 pounds each.

The export of walnuts to the United States has developed only within a few years past. Previous to 1910 very little had been done in this line, but in that year on account of good prices in America one or two firms found that a good business could be developed. In the following year, 1911, numbers of firms made contracts for shipment. This induced high local prices; and the Chinese, in their eagerness to get the nuts to the market, harvested them before they were fully ripened, with the result that the nuts arrived in the United States in very poor condition, the American importers, in some cases, refusing to take delivery. This gave the Chinese walnut business a bad name, with the result that exports invoiced at Tientsin to the United States dropped from \$155,127 gold in 1911 to \$25,710 gold in 1912. Last year, however, showed an almost complete recovery, the declared exports from this consulate general to the United States amounting to \$141,133 in 1913. The total amount of walnuts exported from Tientsin to all countries during 1912 and 1913 is shown below in the statistics of the Chinese Maritime Customs; converted into American terms:

Destination.	1912		1913	
	Pounds.	Value. gold.	Pounds.	Value. gold.
Hongkong.....	569,990	\$9,896	688,800	\$14,815
United Kingdom.....	134	6
Japan.....	153,866	7,098	1,609,731	40,230
Russia.....	35,459	508
Chinese ports.....	3,743,734	60,981	4,026,036	88,677
United States.....	18,579	471
Total.....	4,503,184	78,489	6,341,228	144,193

It will be noted that the exports to the United States are given as only 8½ tons in 1913. This was the amount of the direct shipments from Tientsin. The great bulk of the walnuts were transshipped at Shanghai for shipment to the United States, either via the Suez Canal to New York and Boston, or by way of the Pacific ports. In both cases they appear on the customs returns as shipments to Chinese ports. Then, too, it must be noted that the values in the customs returns are very low.

In addition to the nuts exported the Chinese use large amounts both for eating and for the making of cakes and candies. Quantities are shipped to Shanghai and South China for the same purpose.

The prices paid by the foreign exporters to the Chinese have risen considerably within the past few years. In 1910 medium hard-shelled nuts could be bought at an average price of 4.20 taels per picul. This equaled, at the average rate of exchange then prevailing, about \$1.80 U. S. currency per 100 pounds. During 1913 the price of a similar grade of nut was about 6.50 to 7.50 taels per picul. Allowing for the higher rate of exchange which prevailed during that year, this was equal to \$3 to \$3.50 U. S. currency per 100 pound. The prices paid for the nut kernels were about double the prices paid for the nuts in the shell.

SHANTUNG PROVINCE GROWS ABOUT 2,000 TONS OF WALNUTS.

A considerable number of walnuts are exported from Shantung annually. The best walnuts shipped from this province come from the southern section. Shippers say that the business is risky for the reason that the nuts do not run even. Importers often find large quantities of worthless nuts mixed in with the better qualities, making it necessary to refuse full payments for shipments. The Government compiles no statistics as to the production of crops, so that one can only make estimates. It is estimated that about 2,000 tons of walnuts are shipped annually from this province, which has an area of 55,000 square miles and a population estimated at 30,000,000. Most of the nuts go to Austria, Holland, and Germany. Walnuts mostly grow wild in this province; that is, it can scarcely be said that they are cultivated for market purposes.

GLASS FACTORIES AT POSHAN

In the neighbourhood of Poshan have existed for centuries past small glass factories. The hills provide abundant quartz sand, limestone, and coal. The ware produced is well known all over China, especially in the shape of small snuff-bottles, laboriously painted on the inside, lanterns and screens made of coloured spun glass, and thousands of other small articles, such as mouthpieces for pipes, children's toys, beads, and bangles. The value of this ware does not exceed Hk. Tls. 40 per picul, and the annual export *via* Tsingtau is about 7,000 piculs. It is almost entirely a family industry, and the ovens used do not hold above 60 cattie of glass. In 1907 a factory with foreign machinery was started by a Chinese company, with a nominal capital of 1 million taels, of which the government provided Tls. 100,000; only half of the capital was paid up, and was practically used up for the newly erected buildings and machinery. The factory started with seven German experts, of whom none remain now. In 1909 about 5,000 cases of 10 square metres of window glass was the whole output in that line, with a possible 50,000 cases; but lately that branch was stopped altogether, and only tumblers and soda-water bottles are now manufactured. The quality of the rolled glass was low. In 1910 the company got permission to start a lottery, in order to procure more capital; the financial position has, however, not improved, and the factory at present can hardly pay expenses.

ENGINEERING, FINANCIAL AND INDUSTRIAL NEWS

RAILWAYS

S. M. R. Co.'s Regular General Meeting.—The 14th regular general meeting of the South Manchuria Railway Company's shareholders was held at the Tokyo Chamber of Commerce. The meeting was presided over by Baron Y. Nakamura, President, who explained the Co's position upon the proposed splitting-up of the Company's shares of Y200 each into shares of Y100 each. A motion was advanced to resolve each into four shares of Y50 each, but it was only presented in the shape of a hope by some shareholders, in view of the overwhelming majority favouring the Y100 proposition, which was passed unanimously. On the motion of Mr. K. H. Okura, a committee of five was nominated for electing the successors to the present officers after that date. The committee comprised Messrs. Okura, Hosino, Kume, and Nakaya, in addition to the Chairman. The committee repaired to a private room to fix upon their choices, which were reported to the meeting as Messrs. Nakahashi, Kawakami, Magoshi, and Ohashi (all re-elected) and Mr. K. Koyama, President of the 43rd Bank, Osaka, as successor to Mr. Iwashita.

The Chairman next proceeded to report the condition in which the Company stands, concluding with the Company's splendid prospect as the aftermath of the peaceful solution of the Sino-Japanese issue. Then the statement of accounts, as reproduced below, was submitted. Hopes were expressed that the Company's shares would be exempted from income and incidental taxes and also would be included in the approved list of securities of the Nippon Ginko. A few other propositions were laid, but the propositions presented by the Company's Directorate were adopted without division.

STATEMENT OF ACCOUNTS

For the Fiscal Year Ended March 31st, 1915.

GENERAL BALANCE SHEET

on March 31st, 1915

ASSETS

Capital unpaid	Y 36,005,720.000
Property taken over from the Japanese Government	100,000,000.000
Stores	6,213,444.717
Coal in stock	979,395.719
Shares in other companies	1,188,273.000
Capital expenditure:	
Railway	Y 73,498,298.937
Steamship	4,970,435.698
Electricity	4,916,260.455
Gas	1,383,846.613
Harbour & Wharves	12,595,895.165
Mines	15,042,197.414
Workshops	6,261,224.304
Hotels	2,016,880.162
Land Improvements	4,740,802.165
Land	10,621,987.721
Buildings	11,541,158.876
	Y 147,588,987.501
Discount on debenture issue, less amount written off	4,362,368.680
Sundry debtors	2,627,800.967
Payments on Suspense a/c.	2,546,224.935
Payments on a/c. of uncompleted works (Workshops)	317,627.315
Payments on a/c. of uncompleted works (Construction)	128,612.091
Deposits	7,418,740.693
Agencies	458,243.370
Postal & Revenue	8,404.035
Cash in hand and at Bank	322,117.164
Total	Y 316,092,379.027

LIABILITIES

Capital Authorized	Y 200,000,000.000
Capital subscribed	Y 160,000,000.000
Reserve prescribed by Law	1,491,252.620
Special reserve	10,900,000.000
Debentures	117,156,000.000
Sundry creditors	2,646,439.164
Receipts on suspense a/c.	10,781,426.758
Employees' savings deposits	2,860,314.270
Guarantee money	90,550.200
Balance brought forward from Last Term	Y 2,625,295.623
Balance for the Term	7,541,091.362
	10,166,386.985
	Y 316,092,379.027

PROFIT AND LOSS ACCOUNT FOR THE

FISCAL YEAR

Ended March 31st, 1915.

DR.	
To Railway expenditure	Y 8,345,286.210
" Steamer	1,220,405.970
" Mining	11,858,860.420
" Harbour	1,963,966.720
" Land	2,864,199.550
" Hotel	309,800.550
" Electricity	694,875.240
" Gas	114,912.090
" Sundry losses	424,085.203
" General Management Expenditure	3,088,128.760
" Interest on Debentures	5,564,910.000
" Writing off Discount on Debentures issue	680,093.280
" Balance for the Term	7,541,091.362
	Y 44,670,616.355
CR.	
By Railway receipts	Y 23,216,721.520
" Steamer	1,051,332.500
" Coal	14,075,823.540
" Harbour	1,290,612.140
" Land	1,778,544.650
" Hotel	253,001.600
" Electricity	1,101,737.930
" Gas	303,243.950
" Sundry	75,049.525
" Interest a/c.	624,558.890
	44,670,616.355
Net profit disposed as follows:—	
To Reserve prescribed by Law	377,054.570
" Dividend on Government shares	
" Dividend to shareholders, other than the Government, at the rate of 6 per cent, per annum	1,420,000.500
To Supplementary dividend to shareholders other than the Government, at the rate of 2 per cent per annum	478,333.330
To Special reserve	2,500,000.000
" Bonus to Officers	300,000.000
" Honorariums for Retired officers	35,000.000
" Balance carried forward to the next term	2,560,969.085
	10,166,386.985
By Balance brought forward from the preceding term	2,625,295.623
By Balance for the term	7,541,091.362
	10,166,386.985

S. M. R. Co. Traffic Returns.—During the month of June the S. M. R. Co. Traffic Returns ran as under:—

COMPARED WITH LAST YEAR

Passenger receipts...	Y 271,703.09	— Y 52,753.58
Goods receipts	1,062,248.03	+ 102,145.62
Warehousing „ ..	21,821.74	
Miscellaneous	52,347.19	
	1,408,120.05	

The total traffic receipts from April last to June amounted to Y5,698,277.22, being an increase by Y934,534.77 over the corresponding period of last year.

Conditions in Shantung.—At Moji an interview on the condition of the Shantung Railway and the present situation was given by Mr. T. Fujita, the superintendent of the Railway, who has been recalled by the Government.

The captured lines have been all repaired, he stated, but it will take two months more to complete certain repair works. The receipts of the lines are 250,000 taels or only half the figure netted by the Germans. The rolling stock of the railway is very incomplete and accommodation in cars is too bad to give any degree of satisfaction to passengers.

Owing to diplomatic troubles, stated Mr. Fujita, the Chinese merchants are holding off from purchasing, evidently preferring to wait further developments. Accordingly trade is now in suspense. No cargo from Tsinan for Europe comes down to Tsingtao and the port is very lonely.

The mines along the railway lines are partially worked while water is being pumped out of the pits. The daily output is now limited to 500 tons. Japanese residents in the interior are strictly watched by General Chang Sun's troops under the pretext of protection.

New Line in Manchuria.—The railway line extending 65 miles between Supingchiai to Tsengchiatang in Manchuria has been decided to be undertaken by the South Manchurian Railway Company and steps are being taken to build the line. The line in Eastern Inner Mongolia to join the above line at Taonanfu will soon be prepared to be built.

Wants to Buy Cranes.—Through the Harbin consulate the commercial department of the Chinese Eastern Railway has cabled to the United States requesting quotations on three powerful steam locomotive cranes, railway scales, and a large order of tarpaulins to cover goods exposed at railway stations, where there are insufficient warehouses for storing them against the weather.

Direct Russo-American Freight Service.

—The assistant chief of the commercial department of the Chinese Eastern Railway states that direct Russo-American freight transportation between Vladivostok and American Pacific coast ports has been arranged. For the present only Russian steamers of the North Steamship Co. and the Volunteer Fleet are to be placed on the run, but it is expected that later on American steamers also will be engaged on this route. It has been suggested that in connexion with the opening of this new commercial route a Russo-American chamber of commerce should be established at Harbin, similar to the one organized at Petrograd.

American Cars Ordered.—The Chinese Eastern Railway has placed an order for 10,000 steel freight cars in the United States. These cars are to be brought to Harbin in sections and assembled there, and the railway authorities are already making preparations for putting them together at the Harbin shops. An official states that the cost of this work alone will be in excess of \$250,000 United States gold. The work will be continued night and day, and the expenses for lighting the grounds will total \$12,500. It is said that in addition to the 2,000 laborers already employed 3,000 more will be required for assembling these cars at the railway shops. The effort will be made to work upon 300 cars at a time, and it is expected that from 50 to 60 cars will be completed ready for use each day.

Siam Railway Receipts.—Following are receipts from 836 klm. of broad gauge lines of the Siamese Railways for the current year:

	Approximate Year 2458	Actual Year 2457
Passengers	T224,000.	240,466.
Goods	203,000.	126,623.
Others	3,970.	3,602.
Total	430,970	370,691.

The total April, 1914, to March 1915, was 945,206, as 944,919.

The new Yokohama station now under construction will be completed by the end of the present month at the latest and opened in the early part of July. The new building is surrounded on three sides by rails just as those often met with in Germany. The style is the modern Renaissance and triangular.

Hankow-Ichang Bridges.—Tenders are called for the supply of about 845 tons of steel bridges as follows:

- 1 Steel Bridge of a span of 21 meters.
- 1 Steel Bridge of a span of 31.5 meters.
- 2 Steel Bridges of a span of 42 meters each.
- 4 Steel Bridges of a span of 60 meters each.

Tenders are to be forwarded to the Director General of the Han-Yueh-Chuan Government Railways at Hankow up to September 25, 1915 at 6 p.m.

Tenders presented up to that date will be opened in the presence of the bidders at the Director General's Office at Hankow. Tenders have been called for also in Germany, France, Great Britain and the U.S.A. for which the opening day has been fixed also for September 25, but acceptance of tender will not take place until when result of all tenders has been received at Hankow.

Embargo on Orient.—The Western Pacific has announced a partial embargo on traffic destined for the Orient and Australia from San Francisco because of the difficulty in obtaining space on ocean steamers. Agents will be authorized to sign bills of lading on shipments for China, Japan, Australia, New Zealand and the Philippine Islands provided specific bookings can be made.

Amur Railway.—The struggle in Europe has not made Russia let up in the least on her work in the construction of the Amur Railway. The western and middle sections of the line were opened last August, and the traffic on the eastern section was started on March 14, although the service is still limited to three trains a week. The iron bridge across the Amur River is still uncompleted. Last winter rails were laid on the frozen stream and communication with Khabarovsk was maintained, but when ice melted ferry boats had to be employed. The bridge, according to the original plan, is to be completed next spring, but owing to the lack of material and labor instanced through the war, the work will be delayed.

With the advancement of work on the Amur line, the improvement of the Usuri Railway, to be connected with the former, is made necessary, and a sum of five million roubles is to be disbursed during the current year for the purpose. One million roubles will be spent for the construction of an indirect line to Kivarsowa, another one million for expenses of double-tracking the section between Vladivostok and Nikolisk, while the balance will be used for the Khabarovsk and Nikolisk section.

Manila Railway Tariff.—Should the board of public utilities approve the new base tariffs proposed by the Manila Railway company to take effect on August 1, second class passenger accommodations will be abolished, first class rates will be somewhat reduced, and those of third class passengers correspondingly raised. Where in the past there have been but four classes of freight there will be seven. On the first four classes rates are raised, but the addition of the further number permits of lowering the charges upon articles most commonly shipped over the line. A general average of the change shows approximately a 10 per cent increase. The proposed passenger rates, covering only first and third class accommodations, are as follows: First class—1 to 100 kilometers, P.04 per kilometer (3.2 cents gold per mile), 101-200, P.035; 201-300, P.03; 301 upwards, P.026. Third class—1 to 100 kilometers, P.022; 101-200, P.02; 201-300, P.018; 301 upwards, P.016.

Shanghai's Railless Cars.—The railless electric cars that were put on several months ago by the Shanghai Tramways Company and abandoned because they tore up Fukien Road have been put on again. Fukien Road has been rebuilt with a concrete foundation and surface, so that it will be able to bear the weight of the cars. Five cars will be kept in service all the time.

The following is the traffic return of the Shanghai Tramways for June, 1915, and for six months ended June 30, 1915, with figures for the corresponding periods last year:—

	June, 1915	June, 1914
Gross Receipts	\$105,843.87	\$109,165.24
Loss by currency depreciation	28,102.75	26,625.95
	Mex.	Mex.
Effective receipts	\$77,651.12	\$82,539.29
Percentage of loss by currency depreciation	28.59	25.99
Car Miles run	273,441	290,910
Passengers carried	4,704,774	4,840,420
	6 months ended June 30, 1915	6 months ended June 30, 1914
Gross Receipts	\$633,328.21	\$636,242.94
Loss by currency depreciation	168,907.67	147,281.55
	Mex.	Mex.
Effective Receipts	\$464,330.54	\$488,961.39
Percentage of loss by currency depreciation	28.47	24.50
Car miles run	1,616,469	1,602,117
Passengers carried	27,672,480	26,423,364

Canton-Hankow Railway.—The offices of the Canton-Hankow Railway have been removed to the new buildings outside Wuchang, and the new address of the railway is Wuchang, c/o Post Office, Hankow.

SHIPPING

American Flag at Saigon.—One of the most striking features of the commerce and navigation of Saigon during 1914 is the increase in vessels flying the American flag, which made 14 visits in 1914. With two exceptions there took place in the July-December half of the year. Already, in 1915 7 American vessels

have visited this port. On two occasions during the present fiscal year this port has witnessed the unusual sight of the presence of 3, and on one occasion of 4, vessels flying the American flag. These ships are all well-equipped vessels, ranging from 1,410 to 2,005 tons, and they compare not unfavorably with vessels of European nations engaging in Cochinchina commerce.

The causes of this increase of American vessels are the unusual rice crops of 1913 and 1914, the quietness of insular trade in the Philippines, and the war. The U. S. transport *Warren* made one trip and the U. S. cable ship *Risal* several trips from Manila for rice. The Philippine Steamship Co.'s vessels, *Rubi* and *Zafiro*, formerly engaged in passenger traffic between Hongkong and various Philippine ports, have been chartered to carry rice from Saigon to Hongkong and Singapore. The *Mackinaw*, a tramp steamer belonging to the Robert Dollar Co., happened to be in these waters at the outbreak of the war and has found this trade profitable because of the scarcity of available tonnage and the consequent higher freight rates. The *Rubi* and *Zafiro* carry passengers. They have a tonnage of over 1,400 each and are well equipped for the local traffic. For the first time in history an American can travel from San Francisco to Saigon in vessels, running on a fairly regular schedule, under the American flag.

Pacific Mail Cuts Honolulu.—A Honolulu message to the *Osaka Asahi* states that the Pacific Mail Steamship Co. has announced the discontinuation of call of its steamers at Honolulu after October and the operation of a direct steamer service between San Francisco and Oriental ports. The proposed abolition means a telling blow to the port of Honolulu.

From the foregoing telegram it may be seen that the P. M. S. S. Co., which was generally anticipated to be dissolved with the operation of the U. S. Seaman's Act from next November, as reported previously in these columns, will continue maintaining its trans-Pacific service. The Company's representatives approached the Washington Government, according to wire advices, for the withdrawal of the Act and, in consequence, the Government authorities have been prevailed upon to postpone the operation of the Act indefinitely.

Minnesota's Record Cargo.—When the Northern Pacific liner *Minnesota* steamed out of Yokohama on her last trip, she carried the largest cargo ever shipped in one bottom on either the Atlantic Ocean or the Pacific, according to the general agent for the *Minnesota* in Yokohama. The total of the cargo is estimated at 30,000 tons.

Some of the items of the cargo were of themselves almost records. A shipment of Formosan tea transhipped at Kobe, amounting to 37,425 chests; a consignment of Manchurian maize, also transhipped at Kobe, of 43,430 bags; a consignment of 38,496 bales of hemp from Manila for Chicago, and 2,730 bags of peanuts. The liner also carried 1,500,000 yen in gold.

This cargo exceeded the liner's normal capacity by some 2,000 tons. This was possible because no steerage or third class passengers were carried and some of the second class space was used for cargo. Teak timber, bundles of rattan and a consignment of 800 cane chairs for the Glacier Park Hotel, Glacier National Park, Montana, were stowed on deck. The *Minnesota* will also carry a large cargo when she sails from Seattle in the last part of July for Vladivostok. She will discharge 20,000 tons of miscellaneous cargo at Vladivostok alone.

Japanese Yards Active.—The shipbuilding industry in Japan, says the *Nagasaki Press*, is said to be in a very flourishing condition just now. Not only are the Mitsu Bishi and Kawasaki Dockyards fully occupied with orders but the smaller yards are sharing the prosperity. The Hokkaido Tanko

Kisen Kaisha has ordered a 3,300 ton collier from the Uruga Dockyard, but the vessel will not be completed before October, 1916, owing to pressure of work. At the Osaka Iron Works one 4,000-ton, one 2,500-ton, and two 300-ton freight steamers are being built for small owners. Instead of buying second-hand vessels from abroad the latter are beginning to order new ships.

Yokohama Harbor Busy.—According to the records of the Yokohama Municipal authorities, the number of steamships entering the Yokohama harbor during last year was 4,026 with a total tonnage of 4,252,438, while the number of vessels leaving the port during the same period was 4,116 with a total tonnage of 4,495,020. During the same period, the number of sailing vessels entering was 65,438 with a total tonnage of 252,939. The number of sailing vessels leaving the port was 14,820 with a total tonnage of 140,620.

In comparing the figures with the previous year, the number entering is an increase of 3,073 vessels, but there was a decrease in tonnage of 1,180,707. The number of departing vessels decreased 1,217 and 1,454,725 in tonnage. This was due to the inactivity of coasting trade.

During the week which ended June 26, twenty-four steamers with an aggregate tonnage of 67,775 tons net, entered the port while 25 steamers with a total tonnage of 76,692 tons sailed from the port. Of the above 24 steamers which arrived at Yokohama 19 were Japanese, 3 British, 1 Russian and 1 American.

Fleet Guards Tsingtao.—The Japanese Government has decided to abolish the office of the Naval Port at Tsingtao at the end of this month. A fleet will be left on guard at the port. Captain Hirose will be appointed commander of the fleet. The Japanese warship Ujina will leave shortly to assume the duty of guard in other waters.

N. Y. K. Plans Expansion.—It is reported that the Nippon Yusen Kaisha is shortly to increase its capital. The company's term of existence is to expire at the end of September, and the Board of Directors held a special conference last week to discuss various problems referring to the continuation of the company and the proposed increase of capital, and it was decided that the following draft was to be presented for discussion in an extra general meeting of the shareholders: That the by-laws of the company may be revised so that the company may continue its existence for another 30 years. That the company's capital may be increased from the present amount 22,000,000 yen to 44,000,000 yen and that the increase be divided into 440,000 shares, the new shares to be assigned to the existing shareholders, each new share to each old share, and that the payment of share money at the rate of 12.50 yen per share shall be made out of 8,200,000 yen which shall be distributed among the existing shareholders. This being reduced, there will be a surplus of 2,750,000 yen, and this may be distributed among the present shareholders at the rate of 6.25 yen per share.

The funds now held by the company shall be distributed among the shareholders, special bonus to the directors, auditors and officers, and men, and company's agents as special allowances.

Japan's Naval Plans.—The public was advised at the time when the Army Increment Bills were passed by the Houses of the Imperial Diet by some financial writers that it would be asked to sanction the Naval Increment proposals very soon and that the race of increment undertaken by the Army and the Navy would soon necessitate the Government to plan an increment in various taxes, says the Japan Daily Mail. Though not many days

have been passed yet since that warning was given, already reports are rife in the political circles regarding the possible introduction of the Naval Increment Bills in the next session of the Imperial Diet. The whole scheme of increment is kept secret by the Naval authorities but part of it has already leaked out. The part known consists of the construction of 4 superdreadnoughts, 2 scout boats, 24 destroyers, 8 submarines, and 1 parent ship for planes, the credit for which is estimated at 190,000,000 yen spread over a period of 4 years from 1916.

This part of the whole scheme is nearly half the plan reported before as the entire scheme of the Naval Increment approved by the Defence Conference held last year. The alleged original plan was to build 8 battleships, 8 battle cruisers, 6 scout ships, 64 destroyers, 24 submarines, and a few suppliers or transports during a term of 8 years. It was modified further last year. According to the modified plan for 8 years from the present 4 battleships, 2 battle-cruisers, 6 scout ships, 30 destroyers, and 12 submarines are to be built. Therefore, the Naval authorities say, the plan now to be realized will not affect the financial programme in any degree. The military authorities on the other hand are credited with a statement that it would be better to postpone it till after the present war, as the war will alter the naval tactics to no small degree, though they are not opposed to the plan as it was already passed by the Defence Conference. It is further learned that the plan was already passed by the conference of the Chief Staff Officers just closed and is now in the hand of Admiral Yashiro, the Minister of Navy. Though the new scheme is not disapproved by any concerned, it is believed to be inevitable that sharp discussions will arise as to the advisability of hastily realizing the plan till it is referred to the Imperial Diet.

The Japan Chronicle says:—Of the Naval Estimates for the present fiscal year, which were approved by the Diet in the last session, Yen 23,333,318 is for new construction. This sum includes Yen 11,500,000 from the Treasury surplus, so that the new demand for increased expenditure is Yen 11,833,318. This estimate forms a portion of the total estimate of Yen 104,083,926 demanded by the Yamamoto Cabinet for expenditure on naval replenishment, and approved by the Diet. The estimate will defray in part the cost of three battleships of 30,000 tons each—one named the Yamashiro to be built at Yokosuka, another, the Ise, to be built at the Kawasaki Yard, and the third, the Hyuga, built at the Mitsu Bishi Yard (the total cost of the three is estimated at yen 86,557,010); and of four first-class destroyers of 1,000 tons each, two of which are being built in England, named the Urakaze and Kawakaze, of two submarines of 700 tons each, and four second-class destroyers. In 1913 Yen 6,000,000 was paid and in 1914 Yen 6,529,000 towards the construction of the three battleships. Owing to the failure of the Budget for the present year, work on the Ise and Hyuga was suspended, but at the discretion of the Kawasaki Yard the keel of the Ise was laid on May 5th, and the Mitsu Bishi Yard laid the keel of the Hyuga on May 11th. Work on the Yamashiro alone was continued out of the Government's surplus fund. Upon the publication of the Budget for the present year just approved by the Diet, the construction of the three battleships will be pushed on. Eight destroyers and two submarines are to be completed in two years (1915 and 1916). The amount of the cost of construction of ships mentioned each year from this year is as follows:—

1915-6	Y 23,333,318
1916-7	36,048,489
1917-8	25,815,641
1918-9	6,360,471

Total Y 91,557,919

P. & O. Liner Sold.—A report from Singapore says the P. and O. steamer Oriental

has been sold to the Ho Hong Steamship company for £32,000 pending the survey of the steamer at Bombay. The Oriental will be put on the China run by its purchasers.

Japanese Prize Sold.—The former Hamburg American liner Suimow, which was seized by the Naval authorities in the Inland Sea, was knocked down to the Nishin Kisen Kaisha at Saseho in an auction sale. The ship will be employed by the company on the Yangtze River.

Suez Traffic Decreases.—The receipts of the Suez Canal Co. for the first four months of 1915 amounted to \$5,467,160, as compared with \$8,719,740 for the corresponding period in 1914. During the first four months of 1915 only 1,106 ships passed through the canal, as against 1,822 in 1914.

Panama Now Profitable.—The Panama Canal is now operating at a profit. In March the tolls amounted to \$560,785. Operation and maintenance cost \$423,275. The surplus was \$137,510. Since July 1, 1914, the total revenue is \$2,895,300; charges, \$3,018,889; deficit, \$123,588. Up to March 1 the earnings of tolls fell short of meeting the expenses of operation and maintenance by \$261,098.09. From the beginning of the present fiscal year, on July 1, 1914, to March 1, 1915, a period of eight months, the total expenditure attributed to operation and maintenance was \$2,595,613.33. The total earning of tolls in the period were \$2,333,515.24. Operation and maintenance include all the diversified expenditures necessary for keeping the canal open and in order, and the work of hauling vessels through: and to such expenditures have been added a prorated part of the expenses of the civil government, of the sanitary work, and of general administration. These three latter items have amounted to \$574,570.82 during the period. Over a third of the total overhead expense of the Panama Canal is assigned to operation and maintenance.

Bangkok-Singapore Service.—The Straits Steamship Company's fine new liner Kampar has made her maiden voyage to the Monam. The Company has not merely stepped into a run left vacant, by the absence of the N.D.L. vessels, but is vastly improving the service by speedy passages and studied comfort for its patrons. The advent of the Straits liners on this run is proving a boon to all who have dealings with Siam.—Malaya Tribune.

Bonus for Employees.—All the European employees of the British India S.N. Co. on all steamers afloat, whether in Government service as transports or carrying out the usual runs, have been granted a war bonus of 15 per cent. on their salaries from January 1, 1915, which is to continue as long as the war lasts.

BRIDGES AND BUILDINGS

Manila's New Bridge.—The Governor General has approved the city of Manila public works allotments for the fiscal year of 1915. Among the items is P.300,000 to meet the initial cost of the new bridge to be constructed across the Pasig at calle Rosario. The estimated cost of this structure is P.1,250,000.

Straits Settlements School.—One of the most modern buildings of recent structure in Singapore city of public nature, is the new Pearl Hill School, a two-story brick structure with the first floor of concrete. The second floor consists of hardwood and Siam teak.

The staircases are of reinforced concrete as is balcony over looking the main hall and gallery, which is capable of accommodating 200 children. The main assembly hall is 84 feet long. The ground floor is devoted to offices, teachers' rooms, etc. There are 16 classrooms, 6 rooms, 30 by 20 feet, on each floor, which will accommodate 600 children.

The outbuildings consist of luncheon rooms and a play shed. The building is 190 by 78 feet, and was put up at a cost of \$40,000 (gold).

Kuala Lumpur's Y. M. C. A.—The construction of the new building for the Kuala Lumpur branch of the Y. M. C. A. has been commenced on the association's own ground in Brickfields Road. The new building, to cost about \$11,350 gold, is to be a simple one-story building designed with a view to the addition of a second story for secretary's quarters and living rooms for young men. The building will have a front of about 100 feet, a veranda, 12 feet 6 inches, running the whole length; a hall, 58 feet 6 inches by 27 feet 9 inches; a reading room 24 feet by 27 feet 9 inches; a billiard room 24 feet by 32 feet; and a gymnasium 34 feet by 33 feet. The building was designed by local architects.

New Mosque in Perak.—An interesting new structure is the mosque being erected at Kuala Kangsar, in Perak, Federated Malay States. It is of reinforced concrete with iron beams, columns, and slabs and cast concrete walls. Even the minarets and domes are built in this way. Over the main building, and 40 feet above ground, a large reinforced dome, 60 feet in diameter, is supported on 16 reinforced concrete columns, and above this there is another dome 80 feet high. There are 4 minarets 8 feet in diameter and 125 feet high, 12 smaller towers, about 70 feet high, and several domes over porches, bathing tank, etc.

Throughout the interior marble facing is used on the walls, columns, and floor, while an elaborate design of gypsum ceilings and other Oriental decorations is carried out throughout the entire building. The total cost of the work is said to be S. S. \$300,000 (\$170,000 U. S. currency). All reinforcements for the concrete work, as well as the structural steel and metal lathing on which the plastering is placed, is of American manufacture.

Construction Work in Klang.—Further evidence of progress near Port Swettenham, Federated Malay States, is certain construction work taking place at Klang, a new station.

There is under construction now a row of 25 shop houses, each 20 by 70 feet, two stories high. The building rests on steel and concrete columns, with steel beams and trusses in the framework, and is fireproof with the exception of wood floors. The total cost is \$71,000 gold.

There is under construction a bank building about 120 by 80 feet, two stories high of reinforced concrete, which has burglar-proof strong rooms and record rooms. The estimated cost is \$68,000 gold. There is also under erection a new power station at Seremban, which is to be 100 by 40 feet, of brick construction at a total cost of \$17,000 gold.

P.50,000 Dormitory for Manila.—At the Methodist conference it was decided to build a new dormitory for girls at Manila to cost P.50,000.

Manila's new Laboratory.—The proposed laboratory of the Philippine University, which is to supply the needs of both the chemistry and zoology departments for years to come, is now assured, the governor general having approved the release of the P.30,000 voted

during the last session of the legislature for the structure.

Philippine Market Construction.—The government of the Philippine Islands is encouraging the construction of public markets in the municipalities by the loan of public funds. During the coming fiscal year \$350,000 gold will be loaned from various trust funds for this purpose, the total expenditure being planned at about \$400,000 gold, the territorial government in each case advancing only a certain portion of the cost of the structure, the municipality advancing the balance. Loans have already been arranged for and work started on markets in Lemery, Batangas Province, \$6,000; Santo Tomas, Batangas, \$5,000; Bacarra, Ilocos Norte, \$6,000; Bauang, La Union, \$6,000; Hilongos, Leyte, \$6,000; Ormoc, Leyte, \$13,500; Penaranda, Nueva Ecija, \$4,750; Bacon, Samar, \$5,700. Additional allotments are being arranged. The loan of public funds from various trust funds for public works in the islands this year will aggregate about \$1,000,000 gold.

China's State Department.—The new building for the State Department has been completed, but after a personal inspection of the building the President decided it was not spacious enough for such an important government organ as the State Department. There are over one hundred rooms in the new building, which is of one story. Originally it was planned that the building should be of two stories, but any one on the second story of the new building could overlook the Presidential Mansion. To respect the President's privacy, the authorities had to alter their plan. The cost of the building is over \$250,000.

Japan's Banquet Hall.—Imperial sanction has been given for the construction of a banquet hall in Kyoto for the Coronation feasts of the Emperor in November. The floor of the hall will contain 252 square feet, with a music stand in the centre. The construction work is to be completed in September.

Japan Plans Fine Arts Gallery.—Various plans have been suggested for the commemoration by Tokyo of the Emperor's accession to the throne, which is to be officially celebrated in Kyoto this fall. One is the establishment of a big fine arts gallery. This plan has been suggested by artists and is supported by many prominent business men. It has been brought to the notice of the authorities of the Department of Education, although it is still uncertain whether the educational authorities can approve it because of financial reasons. According to some of those interested the establishment of such a gallery would cost about one million yen.

Japanese Post Office for Antung.—The supplementary estimate for the construction of new premises for the Japanese Post Office, Antung, destroyed by fire last winter, was included in the list approved by Parliament which appropriated Y87,222. Work will be commenced shortly.

Philippine Bridge Bids.—Bids for the construction of the Malaywanak and Kaytituga bridges on the Tuy-Nasugbu road in Batangas have been received by the director of public works as follows:

The Atlantic, Gulf and Pacific Company offered to do the work on the first structure for P.27,400, and on the second for P.20,000, making a uniform charge of P.30 per cubic meter for extra concrete, and P.12 per cubic meter for extra adobe stone masonry. Time limit 300 days.

M. E. Martin bid P.25,000 on the first bridge, and P.22,000 on the second, extra concrete P.30 per cubic meter and extra masonry, P.18 per cubic meter. Time limit 240 days.

FINANCE

Bank of China's Profit.—The net profit of the Bank of China for the first half year, this year, is about \$800,000, according to a report in the Sinwanpao.

Canton Revenue Grows.—The revenue of the Canton Customs for the second quarter of 1915 amounts to 9,378,000 dollars. That means one million dollars more than in the first quarter.

China's Customs Revenue.—The revenue of the Maritime Customs for the month of June is Taels 2,860,000, while that of the native Customs is Taels 380,000.

Redeem Tsinanfu Notes.—The Bank of China has commenced to redeem the over issued banknotes of the native banks in Tsinanfu.

Japan and Mongolia.—The Japanese Department of Finance has appointed a commission to investigate the establishment of a bank to invest funds in land in the development of Manchuria and Mongolia and to give loans on securities other than land.

Mukden Government asks Loan.—The Mukden Government, according to Japanese reports, is asking the Central Government for permission to borrow S. Y300,000 monthly from the Bank of China between June and October to meet the financial deficit created after disbursing S. Y600,000 previously borrowed from the said Bank.

Hongkong Finances.—The financial statement for March, 1915, published in the *Hongkong Gazette* is as follows:—

Balance of assets and liabilities on 28th February, 1915.....	\$3,132,381.83
Revenue from 1st to 31st March, 1915.....	827,709.90
	3,960,091.82
Expenditure from 1st to 31st March, 1915.....	914,625.15
Balance.....	\$3,045,466.67

Eastern Provinces Deficit.—The estimates for the current year, as submitted by China's three Eastern Provinces, are:—

	Revenue S.Y.	Expenditure S.Y.	Deficit S.Y.
Fengtien.....	11,340,000	13,240,000	1,900,000
Kirin.....	7,760,000	10,460,000	2,700,000
Heilungkiang.....	6,280,000	6,970,000	670,000
Total deficit.....			S.Y. 5,270,000

China Needs American Bank.—In a recent issue of the Peking Gazette there appeared an article, first printed in the Daily Telegraph, on China's future and British interests, in

which is set forth the necessity of banks and banking co-operation in China as the most effective means of advancing British interests. The conclusions are equally applicable to the United States, says Commercial Attaché Julean H. Arnold, in a report to the Department of Commerce.

Until we have in China a solid, well-capitalized American bank, there is little hope for a substantial increase in American trade in this country. There are industrial plants to be installed, China offering the best field in the world for cotton manufacturing. There are tens of thousands of miles of railroads to be built, there are tramways, telephones, electric plants, glass-manufacturing establishments, oil mills, flour mills, etc., to be erected, there are rich mineral deposits to be exported. But these all require the assistance of foreign financing in order that they may be profitably handled. There is not the necessary ready money in China for these undertakings. The various foreign banking interests in China have been financing just such works as these mentioned, and the trade of the countries who offered the financial assistance prospered proportionately.

Owing to the present disturbed conditions in international affairs an opportunity now presents itself in a very attractive way for the entrance of American banks in China, but the work must be engineered by men on the spot, men familiar with conditions in that country. Such men it is possible to obtain, and it remains for American banking interests to give this field their intelligent attention. Never in the history of China have the people of this country been more friendly disposed toward America and things American than at present; hence, now is the time for American manufacturers working through American banks to come into this field and establish themselves in such a manner that, like certain large American companies that have their own organizations strongly entrenched in this country, they may profit by the opportunities that this market has to offer to well-capitalized concerns willing to give to China the intelligent consideration that marks the business of such companies at home.

Japan's Postal Savings Deposits.—The amount of postal savings in Japan at the end of June was 204,910,000 yen, showing a net increase of about 3,000,000 yen when compared with May, the rate of increase being the highest on record in recent years. The cause may be the absence of the demand for money for industrial investment and the lowering of bank rate, which has induced the public to prefer the postal savings.

Banking in Japan.—According to investigations there were 2,166 banking houses in Japan at the end of March last and their combined capital was 942,549,265 yen. Semi-banking houses numbered 10, their capital coming to 94,500,000 yen.

Japan's New Army Budget.—All armament extension programmes planned by the military authorities for the fiscal year 1916/17 are embodied in the Budget estimates to be referred to the Finance Department by the War Office very shortly. In those plans new works are to be undertaken. Among others 1,863,181 yen will be appropriated additionally for construction of barracks, purchases of horses, and accommodation of medical corps for the new divisions in Chosen. In the ordinary expenditure 1,500,546 yen more will be appropriated for the same end. Big sums will be appropriated for the creation of auxiliary corps and investigation of aeronautics together with increasing appropriations for the Flying Corps. A wireless corps will also be inaugurated and the automobile corps extended with a large increase in cars.

Plans China-Japan Bank—Five different plans have been put forth for the proposed Sino-Japanese bank.

The first of the scheme is that the Governments of both countries hold its shares in equal number. The bank is to issue notes and have other privileges. The capital now contemplated is Yen 50,000,000, and the shares to be held by the two Governments may be transferred to the people.

The second plan is to form a permanent financial syndicate among the prominent banks in Japan, to carry out investigations for investments in China, and to facilitate such investments. The shares of the syndicate are to be held mainly by the banks.

The third plan is to organize a special corporation to investigate the conditions in China financially or economically, and should the investigation confirm the advisability of investment for such and such purposes, then a financial syndicate would be promoted.

The fourth plan is to establish a central bank in Manchuria. The plan originated with the South Manchuria Railway Company, but the company dropped the scheme as it was argued that the S. M. R. Co. should refrain from banking business.

The fifth plan is to organize a financial syndicate for industrial investment in China, but this plan is started by some Tokio bankers not so much because of their enterprise for China, as because of their desire to avert the financial relaxation prevailing here, by creating a new demand for the idle money.

The view on the anti-Japanese boycott in China that it is of a temporary nature but that the effect of the new tendency in Chinese industrial development on trade will be more permanent and serious, as telegraphed by a Shanghai correspondent, has attracted attention in Tokio and it is felt that the Japanese business men who are interested in enterprises in China should be more wide awake to meet the new circumstances. Therefore the proposed Sino-Japanese Financial Bank should make the interests of China and the Chinese people the first consideration to bring about more intimate relations between the two nations.

Japan's Revenue Decreasing.—Mr. Hamaguchi, ex-Vice-Minister of Finance, has stated in a press interview that the revenue for the current fiscal year would fall short of the sum estimated because of the decrease of import duty and smaller income from Government monopoly and *sake* tax. The Government would have no alternative, he said, but to supplement the shortage out of the surplus fund remaining from the previous year's finances. The Government already decided to economize in every item of expenditures, and postpone extra works. This has caused some to think that the Government will increase taxes, but Mr. Hamaguchi has emphatically denied that such is the case.

Referring to the recent depreciation of Japanese Government bonds in London market, he has expressed his view that the cause is simply due to the issue of the British war bonds at such a high rate as 4½ per cent. Some fear that the Japanese domestic bonds exported to London market might be re-imported because of the war, but so far none has been sent back. London cables to the Bank of Japan dated July 8, state that Japanese bonds again fell considerably. The first 4 per cent bonds fell by 2½ points to 63½, the second by 1 point. Others fell either by ¼ or more points. Compared with last month, the figures and the difference in some of the bonds are as follows:

	June 9	July 9	Fall
First Fours	71½	63½	8
Second Fours	74½	71	2½
Third Fours.....	70½	68	2½
First Fours and a half ...	90¼	83¾	6½
Second Fours and a half.	88½	83¼	5
First Fives	91½	91	½

POPULATION AND COLONIZATION

Japanese in the Philippines.—A correspondent of the *Tokyo Asahi*, who is now visiting the Philippines, sends to his paper a correspondence which purports to show the state of things in the islands in a clear light and incidentally forecasts a probable large increase in the Japanese population for the near future. There are some among the Japanese, writes the correspondent, who fear that the relations between the Philippines and Japan are not very friendly because of the anti-Japanese feeling shown by some Americans in San Francisco, but the facts are quite the contrary.

In the first place, the heat in the islands is too much for white labour. The Chinese are the best labourers for the islands; but the real trouble is that there exists a law prohibiting the entrance of the Chinese. It is true that there are 60,000 Chinese, but they are already established on their own farms, so that they cannot be employed for opening up new lands. The natives are too lazy for work. Under the circumstances, the Japanese are the only possible labour which can be employed for the development of the Philippines. Now the American policy in the islands is to make them independent in economy as soon as possible. America wants, it is clear to anybody, to get rid of the help she has to give to the Philippines. She is trying, therefore, to develop the natural resources of the islands in order to establish an economic independence for the latter. There is no doubt that there is a very good market for Japanese labour here, but contract labour is not allowed, so that those desiring to come must be independent labourers.

According to the statement of the correspondent, there are between 4,000 and 5,000 Japanese in the Philippine islands. (According to other reports there are more than 4,000 in Mindanao alone.) About 1,700 of them are in Manila; 700 are carpenters, 300 fishermen, and others are in various employments. The fishermen own 30 boats, and do fishing by means of nets. Their earnings are 50 yen per month. The carpenters are doing very well, and earn twice as much as the fishermen. As for the merchants, there are the Mitsui Company, Mr. Chubei Ito, of Osaka, and some others. The Mitsui Company deals principally in coal, while Mr. Ito exports hemp. The amount of hemp exported to Japan reaches 6,000,000 yen per year. The lands owned by the Japanese for the cultivation of hemp extend over an area of 1,224 acres. The land laws of the islands provide that a foreigners' company which has more than three American or Filipino incorporators can own land. Timbered lands can be had almost for nothing: For instance. The Ohta Development Company established by a Japanese, Mr. K. S. Ohta, has acquired lands by virtue of these laws. When the company was first started in 1906, it had a capital of 100,000 yen. At present its capital amounts to 250,000 yen and practically controls the market of hemp of quality suitable for manufacture of braids. There is also pearl shell fishing, in which the Japanese are engaged and are said to be "skinning" the best shellbanks to the great detriment of the natives. They are given 30 yen a month with board, but the profits of the boat owner are restricted only by the amount of shell he can find.

Japanese Abroad.—The Foreign Office has published tables showing the number and professions of the Japanese residing in foreign countries. According to them, the Japanese residing in foreign countries at the end of last June numbered 359,716, of whom 179,393 were females. As compared with the corresponding period of the preceding year, an increase of 38,454 is shown. When they are classified as to the place of their residence, Asia comes first with 134,498, of whom 73,247 are males;

next comes the American Continent with 117,122, of whom 92,264 are males; third comes Oceania with 106,865, of whom 78,051 are males and the remaining 32,614 are females; last comes Europe with 1,230.

Classified in detail, they are located as follows:—

ASIA.			
	Males.	Females.	Total.
Russian Asia	2,260	2,303	4,563
China	67,363	54,593	121,959
Hongkong	769	786	1,555
Saigon	31	130	161
Siam	157	61	218
Singapore	2,298	2,868	5,166
British India	369	510	879
OCEANIA.			
Hawaii	57,245	33,563	90,808
Sydney	7,583	227	7,810
Manila	4,431	867	5,298
Batavia	1,592	1,357	2,949
AMERICA			
U.S.	67,041	12,601	79,642
Alaska	892	61	953
Mexico	2,572	165	2,737
Canada	9,156	2,803	11,959
Peru	5,163	319	5,482
Chili	291	14	305
Brazil	9,581	5,881	15,462
Argentine	569	114	683

The *Anto Shimbun* published in Antung reports that the latest official investigation sets the total number of Japanese residents in China at 118,447, including 65,545 males and 52,902 females. The following table shows particulars of cities having more than 1,000 Japanese residents:—

Kwantung Leased Territory, 48,909; Mukden, 16,999; Newchwang, 6,514; Tsitsihar, 1,562; Shanghai, 11,138; Amoy, 1,936; Antung, 7,094; Liaoyang, 3,936; Tiehling, 2,008; Changchun, 6,203; Harbin, 2,211; Tientsin, 4,162; Hankow, 1,626.

Chinese in Japan.—According to the latest investigations of the Japanese Home Department, the Chinese in the country number 11,840, of which 8,767 are men, and 3,073 are women, and occupy 3,680 households. Out of the fifty-one Prefectures and *Do*, thirty are populated more or less by Chinese.

Chinese in Shanghai.—According to the latest investigation as to the number of houses and people under the jurisdiction of the police administration of Shanghai and Woosung, the total number of houses exceed 115,860 and the population is over 585,700. This total does not include the Foreign Settlement.

Investigating South Seas.—Prof. Dr. Tsunetaro Goto, of the College of Science in the Tokyo Imperial University, and Prof. Sadaji Terada, of the Otaru Higher Commercial School, have been ordered to the South Sea Islands, for scientific surveys in these islands. These two scholars will be the last to be despatched to the South Sea Islands. Upon their return home the results of the surveys carried out by the expeditionary parties, who have been despatched to these islands from time to time since the Japanese occupation last year, will be printed and published for the public benefit.

Colonizing Tsingtao.—Baron Funakoshi, who represents the Foreign Office in the Civil Administration Office at Tsingtao, says the *Japan Times*, has just returned to Tokyo in response to a telegraphic summons. Interviewed by a press representative, he gave the following as to the existing conditions of the Japanese settlement there:—

In order to inherit successfully what Germany has done in Tsingtao, during the past seventeen years and the money she has spent

amounting to hundreds of millions of yen, there is a special need for serious-minded and diligent settlers who would carry on steady and methodical work, instead of spasmodic, adventurous undertakings. It is to be deeply regretted, therefore, that there is at present only one hotel decently conducted and fit for the use of foreigners, the rest being suspicious inns which no respectable people can patronize. Besides those engaged in the hotel business, many of the ten thousand Japanese in the place are coolies and barbers.

Because such tramp elements predominated among the Japanese who went to Tsingtao after the fall of the fortress, many Chinese inhabitants, who had fled from war, have not come back, and those who have remained on the spot are afraid of the adventurous rowdies.

For the future development of the port and the harmonious co-operation of Chinese and Japanese, nothing is more desirable and urgent than the sending of inspection bodies of capitalists and businessmen. Without the interest and investment of such people, Japan can never carry forward what Germany initiated with her characteristic thoroughness. The afforestation of denuded mountains, and the opening of a fine bathing beach are among the examples set by the Kaiser's people. The Shantung Railway has at last been restored to its former usefulness, and all the sunken ships will be refloated before the end of this month. The communication by land and sea thus reinstated, a new period of positive reconstruction must begin at Tsingtao as a Japanese colony.

Look into Eastern Mongolia.—The Society for the Study of Far Eastern Affairs belonging to the Japanese Constitutional Party has decided to make investigations into the proposed construction of three railways and the proposed establishment of a financing organization, hospitals, and schools in Eastern Mongolia.

A party of Parliamentary members, representing three Government parties, will start about July 20 on a trip to Manchuria and Mongolia through Korea. Their object is to inspect the conditions in parts of China where Japan has acquired new privileges as a result of the recent negotiations with China.

As a result of official investigation into the prospects of various enterprises in Manchuria and Mongolia the following report has been published by the Japanese Government:—

Agriculture.—The price of uncultivated land is generally cheap. The price of arable land is from 100 yen to 15 yen per *tenchi* or about 6 Japanese tan, according to the locality. The cost for the cultivation of land is 5 to 6 yen per *tenchi*, and the cultivation is very easy. The opening of 10 *tenchi* of uncultivated arable land requires only two days' work for two laborers and a pair of cattle. The soil is best fitted for the growing of millet, beans and hemp, and the growing of rice is also promising. The pasturage is very easy in every part of the region.

Industry.—The manufacture of fur, butter, tinned provisions, soap, glass, kaoliang paper, linseed oil is expected to flourish. Should the mining business make further progress, the manufacture of industrial drugs would become a very profitable business.

Mining.—As to mining nothing definite can now be asserted and the Department of Agriculture and Commerce, the Government of the Leased Territory at Kwantung, and the South Manchuria Railway Company are pushing on the investigations. But at present the production of soda and salt seems to be the main thing. It appears that the land abounds in the two products above-mentioned, especially soda being said to reach over 1,000,000 *kamme* in its annual production. Besides, the dust gold, gold, silver and other minerals are expected to be rich, and the exploration of these minerals cannot fail to be a very promising enterprise in future.

Commerce and Money Market.—Foreign trade or inter provincial trade is prosperous

along the Russian frontier or the borders of China proper. But in the inner part of Mongolia, the country is but thinly populated. Therefore, there is no fixed manner of commerce among them. It entirely depends upon the efforts of Japanese emigrants to settle there permanently and develop commerce. As to the organ for money circulation, a Sino-Japanese bank is shortly to be established to work in Mongolia, but it is hoped that as many Japanese capitalists as possible may invest in enterprises there for the development of the land in every respect.

Confiscate Tsingtao Properties.—The Tsingtao Garrison, it may be remembered, says the *Manchuria Daily News*, issued notices to the effect that all neglected foreign properties there, the claim-holders of which failed to come forward to establish their claims by May 31 would be confiscated. These warnings have been disregarded by the parties concerned in many cases, and such pieces of properties have been decided to be confiscated without exception. An inventory is under preparation. Some of these properties will be used by the Garrison, but others will be either sold by auction or sent to Japan in the cases of portable objects.

NEW ENTERPRISES

Osaka's South Seas Company.—Business men in Osaka have established a South Sea Trading Association, consisting of twelve guilds. Its object is to encourage trade with the South Sea Islands on a large scale. The Association will be strongly backed by the Formosa Bank. Leading business men in Tokyo have also proposed to establish a similar association, but owing to a disagreement among the guilds, the plan has not been realised.

Philippine Potash.—Dr. J. D. Long, director of the bureau of health, in a letter recently sent to the secretary of the interior, states that "an analysis of seaweed collected on the bay shore in Tondo shows that there is about 15 per cent of potash present in the ash." The director also points out that all American countries are at present desirous of securing a supply of potash to replace that usually obtained from Germany, and that the Philippines may be in a position to fill the demand. There are at present no commercially exploited potash beds in the United States, and the present find in the Philippines may prove of great commercial importance. In the meantime the director of health has suggested that the bureau of agriculture make use of the potash residue from the seaweed ash as fertilizer at least, and there is little doubt but that the government will conduct a series of experiments to determine the commercial possibilities of the seaweed mentioned by Dr. Long in his letter.

Potash is used in the manufacture of fertilizers, potash alum, electro-chemicals, gunpowder, and many general chemicals. Practically the whole world supply comes from Germany, which exported 8,311,672 tons during 1910. Since that time many new mines have been opened in Germany, but the present war has prevented its export. In 1911, the United States importations of potash salts amounted to 336,689 tons, valued at \$16,269,408. The commercial control of the sale of potash salts was until recently in the hands of a German potash syndicate, in which all owners of potash mines in the German empire were compelled by law to hold membership. After the dissolution of that syndicate, the German government imposed an export tax which led to protracted negotiations with United States manufacturers who had placed contracts with individual mines in Germany. This was finally adjusted by the cancellation of the contracts.

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W. H. Anderson & Co.
Kailan Mining Administration

Fire Engine

Dick, Kerr & Co., Ltd.

Fire Prevention Apparatus

Mather & Platt, Ltd.

Filament Lamps

Dick, Kerr & Co., Ltd.
Frank L. Strong
Siemens China Co.
Westinghouse E. & M. Co.

Flat Turret Lathe

Jones & Lamson Mch. Co.

Folding Chairs

Simmons Mfg. Co.

Food Products

Anderson & Co., W. H.

Forwarding Agents

W. H. Anderson and Co.

Fuses and Fuse BlocksGeneral Electric Co.
Westinghouse E. & M. Co.**Galvanized Roofing**

American Rolling Mill Co.

Gas EnginesMather & Platt, Ltd.
Worthington Pump Co., Ltd.**Gasoline Lighting Plants**

Andersen, Meyer & Co.

Gas Producer Plants

Westinghouse E. & M. Co.

Graphite Paint

J. Dampney & Co.

High Speed Engines

Drysdales & Co.

Hoisting Engines

Lidgerwood Mfg. Co.

Horse Shoes

U. S. Steel Products Co.

HoseGeo. Angus & Co.
Interlock Metal Hose Co.
F. Reddaway & Co., Fire Hose "Sphincter Grip," Armoured Hose, etc.**Hotels**South Manchuria Railway.
Chosen Railways**Ice Machinery**

Vulcan Iron Works

Insulating Material

Micanite & Insulators Co., Ltd.

Insurance

Stevenson & Co., Ltd., W. F.

Ironfounders

A. F. Craig & Co.

Job Printers

Commercial Press

Journal Boxes

T. H. Symington Co.

Knitting Machines

Shewan, Tones & Co.

Lanterns and Lamps

Andersen, Meyer and Co.

LocksJoseph Kaye & Sons, Ltd.
Shewan, Tones & Co.**Locomotive Speed Indicator and Recorder**

Hasler Telegraph Works.

Locomotive Headlights

Pyle-National Electric Co.

Logging Machinery

Lidgerwood Mfg. Co.

LubricantsAlbany Lubricating Co.
Standard Oil Co.
W. H. Anderson & Co.**Lumber Dealers**Robert Dollar Co.
Jardine, Matheson & Co.
Norton Harrison Co.
Shewan, Tones & Co.**Machinery Merchants**Andersen, Meyer & Co.
Arnhold, Karberg & Co.
Shanghai Machine Co.
Fearon, Daniel & Co.
Frank L. Strong
Schuchardt & Schutte.
Shanghai Dock & Engineering Co., Ltd.**Machine Tools**American Tool Works Co.
Jones & Lamson Mch. Co.
Schuchardt and Schutte.**Marine Engines**Fairbanks, Morse & Co.
W. F. Stevenson & Co., Ltd.**Manganese Steel**Edgar Allen & Co.
Bohler Bros. & Co., Ltd.**Manila Rope**Johnson Pickett Rope Co.
Ynchausti & Co.**Measuring Instruments**General Electric Co.
Westinghouse E. & M. Co.**Meat Products**

W. H. Anderson & Co.

Mechanical Rubber Goods

F. Reddaway & Co.

Mill MachineryShanghai Dock & Engineering Co., Ltd.
A. F. Craig & Co., Ltd.**Mine Locomotives**

General Electric Co.

Mine Prospecting and Development

Peking Syndicate, Ltd.

Mineral Oil Plants & Machinery

A. F. Craig & Co.

Mining MachineryMelchers & Co.
Shanghai Dock & Engineering Co., Ltd.
Shewan, Tones & Co.
Gould's Manufacturing Co.**Motor Omnibus**

Hurst Nelson and Co., Ltd.

Motors

Shanghai Dock & Engineering Co., Ltd.

Motor Launches

Shanghai Dock & Engineering Co., Ltd.

Motor Spirits

Standard Oil Co.

Motor TyresFirestone Tire and Rubber Co.
F. Reddaway & Co.**Motor Vehicles**Commercial Car Co.
Fairbanks Morse & Co.**Oil Break Switches**General Electric Co.
Westinghouse E. & M. Co.**Oiled Cloths and Papers**

Micanite and Insulators Co., Ltd.

Oil Engines

Fairbanks, Morse & Co.

Oil Mill Machinery

A. F. Craig & Co.

Oil Separators

Worthington Pump Co., Ltd.

Oilwell Casing and Tubing

U. S. Steel Products Co.

Ozone Machines

Siemens China Co.

Packings

F. Reddaway & Co.

Paints, Oils and VarnishStandard Oil Co.
Albany Lubricating Co.**Photo-Engravers**

Commercial Press

Piling (Sheet Steel)

U. S. Steel Products Co.

Platform Scales

W. & T. Avery, Ltd.

Power Plants

Frank L. Strong Machinery Co.

Printing MachineryJardine, Matheson & Co.
Shewan, Tones Co.**Pulleys (Steel)**Schuchardt & Schutte
Shanghai Machine Co.
Shanghai Dock & Engineering Co., Ltd.**Pulverizers**

Lehigh Car, Wheel and Axle Works.

PumpsAnderson, Meyer & Co.
Drysdales & Co. Ltd.
Fairbanks, Morse & Co.
General Electric Co.
Jardine, Matheson & Co.
Joseph Evans & Sons
Mather & Platt, Ltd.
Shanghai Machine Co.
Shanghai Dock & Engineering Co., Ltd.
Shewan, Tones & Co.
The Goulds Manufacturing Co.
Worthington Pump Co.**Pulverizing Mills**

Lehigh Car, Wheel and Axle Wks.

Radial Drills

American Tool Works Co.

Railometers

W. & T. Avery, Ltd.

RailroadsChinese Government Railways
Chosen (Korea) Railways.
South Manchuria
Southern Pacific Co.**Railroad Supplies**American Locomotive Co.
Andersen, Meyer & Co.
Arnhold, Karberg & Co.
Baldwin Locomotive Works.
Robert Dollar Co.
Dick, Kerr & Co., Ltd.
Fearon, Daniel & Co.
Fairbanks, Morse & Co.
Hurst, Nelson & Co., Ltd.
Jardine, Matheson & Co., Ltd.
Lima Locomotive Works.
McConway & Torley Co.
Pyle-National Electric Co.
Railway Signal Co., Ltd., The
T. H. Symington Co.
Shewan, Tones & Co.
Shanghai Machine Co.
Shanghai Dock & Engineering Co., Ltd.
U. S. Steel Products Co.**Rail Weighers**

W. & T. Avery, Ltd.

Railway Signals

Railway Signal Co.

Railway Weighbridges

W. & T. Avery, Ltd.

Refrigerating MachineryAnderson, Meyer & Co.
Vilter Mfg. Co.
Vulcan Iron Works.**Reinforced Concrete Construction**Shanghai Dock & Engineering Co., Ltd.
U. S. Steel Products Co.**Rheostats**

General Electric Co.

Road Rollers

W. F. Stevenson and Co.

Roofing MaterialsAmerican Rolling Mill Co.
W. H. Anderson & Co.
Norton & Harrison.
U. S. Steel Products Co.**Rope Manufacturers**Johnson-Pickett Rope Co.
U. S. Steel Products Co.
Ynchausti & Co.
Shewan, Tones & Co.**Rotary Converters**General Electric Co.
Westinghouse E. & M. Co.**Rotary Dryers**

Lehigh Car, Wheel and Axle Wks.

Rubber Tyres

Firestone Tire and Rubber Co.

SafesW. H. Anderson & Co.
Mustard & Co.
Shewan, Tones & Co.**Safety Valves**

Royles, Ltd.

Saw Mill Machinery

Andersen, Meyer and Co.

Scales

W. & T. Avery, Ltd.

Sewer Pipe & Tile

W. H. Anderson & Co.

Sheet Steel

U. S. Steel Products Co.

Shipping AgentsCla. General de Tabacos
Shewan, Tones & Co.
Stevenson & Co., Ltd.**Shipbuilding and Repairs**Fiat-san Giorgio Ltd.
Tsingtau Werft
Hongkong & Whampoa Dock Co., Ltd.
Mitsu Bishi Dock and Engineering Works
Shanghai Dock and Engineering Co., Ltd.
The Talkoo Dockyard and Engineering Company of Hongkong, Limited**Ship-Chandlery**

Ynchausti & Co.

Steamship CompaniesCla. Transatlantica.
Robert Dollar Company.
Pacific Mail S. S. Co.
Ynchausti & Co.
Toyo Kisen Kaisha.**Steam Hoists**

Lidgerwood Mfg. Co.

Steam Kettles

Royles Ltd.

Steam TurbinesDick, Kerr & Co. Ltd.
General Electric Co.
Westinghouse E. & M. Co.**Steel Manufacturers**

United States Steel Products Export Co.

Steel WorksBohler Bros. & Co., Ltd.
U. S. Steel Products Co.**Stokers**

Babcock & Wilcox Ltd.

Stretchers

Simmons Mfg. Co.

Structural SteelBohler Bros. & Co.
Shanghai Dock & Engineering Co., Ltd.
U. S. Steel Products Co.**Sugar Machinery**

A. F. Craig & Co.

SuperheatersBabcock & Wilcox Ltd.
Schmidt Superheating Co.**Tanks**Pacific Tank and Pipe Co.
Shanghai Dock & Engineering Co., Ltd.
U. S. Steel Products Co.
A. F. Craig & Co.**Telephones**Anderson, Meyer & Co.
Kellogg Switchboard & Supply Co.
The Western Electric Co.
Westinghouse E. & M. Co.**Testing Machines**

W. & T. Avery, Ltd.

Textile Machinery

A. F. Craig & Co.

Tiles and BricksGreen Island Cement Co., Ltd.
Kailan Mining Administration.**Tin Plates**

U. S. Steel Products Co.

Tobacco DealersBritish-American Tobacco Co., Ltd.
Cla. General de Tabacos
Olsen & Co., Walter E.**Tools**American Tool Works Co.
Shanghai Machine Co.
Shanghai Dock & Engineering Co., Ltd.**Tool Steel**Bohler Bros. & Co. Ltd.
U. S. Steel Products Co.**Towers Cooling**

Worthington Pump Co., Ltd.

Track Gauges and Levels

Fairbanks, Morse & Co.

Tramcars

Hurst, Nelson & Co. Ltd.

Tramway EquipmentDick Kerr & Co. Ltd.
Westinghouse E. & M. Co.**Tramway Supplies and Specialties**

Anger Mfg. & Supply Co., Ltd.

Trucks

Commercial Car Co.

Tube Mills

Edgar Allen & Co.

Tungsten Steel

Bohler Bros. & Co., Ltd.

Turbine Pumps

Worthington Pump Co., Ltd.

Turbo-Blowers

Westinghouse E. & M. Co.

Turret Lathes

Jones and Lamson Mch. Co.

Valves

Shewan, Tones & Co.

Vanadium Steel

U. S. Steel Products Co.

Vegetable Oil Plants

A. F. Craig & Co.

Ventilating Apparatus

Shewan, Tones & Co.

Water Softeners

Babcock & Wilcox Ltd.

Waterworks EquipmentEdgar Allen & Co. Ltd.
Worthington Pump Co.**Weaving Machinery**

Shewan, Tones & Co.

Weighing Machines—Weigh Bridge

W. & T. Avery, Ltd.

Windmill

Fairbanks, Morse & Co.

Wireless Telegraph Apparatus**Wire Nails**

U. S. Steel Products Co.

Wire Rope and CablesBohler Bros. & Co., Ltd.
U. S. Steel Products Co.**Wood Working Machinery**American Tool Works Co.
Defiance Machine Works
Shanghai Dock & Engineering Co., Ltd.**Wrenches**

Trimont Mfg. Co.